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THE EFFECTS OF ACCELERATION ON THE ACADEMIC PROGRESS AND ON THE PERSONAL AND SOCIAL DEVELOPMENT OF CALGARY AND EDMONTON GRADE X STUDENTS

A STUDY
SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF EDUCATION

FACULTY OF EDUCATION

BY

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The undersigned hereby certify that they have read and do recommend to the Committee on Graduate Studies for acceptance, a thesis entitled "The Effects of Acceleration on the Academic Progress and on the Personal and Social Development of Calgary and Edmonton Grade X Students," submitted by Mary Anne Beaton, B.Sc., B.Ed., in partial fulfillment of the requirements for the degree of Master of Education.

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SYNOPSIS

This study was an attempt to discover to what extent Grade X students, enrolled in Calgary and Edmonton schools, had been accelerated, and to ascertain the effects of acceleration on academic progress and on personal and social development.

A promotion survey was completed by 2618 students. Of this group, 169 pupils had been accelerated. Questionnaires and the Terman-McNemar Test of Mental Ability were administered to 149 accelerated students and to a larger preliminary control group. The final group of 119 accelerated students were matched with control students according to intelligence and as closely as possible, with respect to age. Of the accelerated group, the sixty-eight students who had intelligence quotients of 120 or over were designated as the superior accelerated.

Significantly higher marks were made by the superior control group as compared to the superior accelerated group, in the Grade IX final examinations in Reading and Language.

The superior accelerated students held fewer official positions, were members of a smaller number of athletic teams and participated in fewer social activities. A preference for older companions was evident among the superior accelerated pupils.

On a scale of personal and social characteristics, the similarities in the self-ratings of the two groups were marked. Teachers who scored twenty-four accelerated students on the same scale, gave them ratings as high as those which they gave to a control group.

Over half of accelerated students thought that being younger than

their fellows had been a hindrance in their social life. Approximately, half of them stated that acceleration helped in their school work.

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CHAPTER I

THE PROBLEM

"Acceleration has been the most commonly practised method of adjustment for superior children, and in many instances it has proved to be satisfactory from the standpoint of the child's progress and development."[1] If the lower limit of selection is set at an intelligence quotient of 120, approximately 7 per cent of the school population is mentally superior. Should this group be accelerated?

A study of "Promotion Practices and Policies in Alberta Schools," reported by Clarke,[2] showed that during the school term 1953-1954, only 0.42 per cent of a total of 80,649 students in grades one to eight in Alberta schools were accelerated. At the end of the same school year, the percentage of students who were to be failed was 5.4.

> Theoretically, if five per cent of the pupils in each grade are mastering school work so slowly as to warrant their repeating the grade, at the opposite extreme another five per cent should be mastering it so rapidly as to warrant taking two grades in one year or three grades in two years.[3]

Should more Alberta students be accelerated? The answer to this question depends in part on what has happened to those pupils who have been advanced more rapidly than usual. Has acceleration interfered with their scholastic achievement? Have they developed in a satisfactory way

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[1] Marian Scheifele, The Gifted Child in the Regular Classroom (New York: Bureau of Publications, Teachers College, Columbia University, 1953), p. 37.

[2] S. C. T. Clarke, "Promotion Practices and Policies in Alberta Schools," Alberta Journal of Educational Research, 1:24-34, December, 1955.

[3] Ibid., p. 33.

socially and personally?

For the present study, it was necessary to find out how many of the Calgary and Edmonton Grade X students had been accelerated. An attempt was then made to determine the effects of acceleration on the academic progress and on the social and personal development of these students.

Terman and Oden[4] found that accelerated students did better work in school than students of equal ability who had progressed at the normal rate. How did the marks made by accelerated Calgary and Edmonton students on the Grade IX final examinations, compare with the marks made by non-accelerated students? Did accelerated students show any marked deficiencies in examination subjects?

> Children who are exceptionally well developed physically, mentally and socially find satisfaction in working with others who may be older than they by one or two years; but acceleration beyond this point is ordinarily considered inadvisable for most children because of the complications of social maladjustment that may arise.[5]

Does moderate acceleration tend to retard the social and personal development of students? Terman and Oden[6] found that accelerated students were not appreciably different from others in social adjustment. An effort was made in this study to compare accelerated and non-accelerated pupils with respect to social and personal characteristics. Would the

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[4] Paul Witty, editor, The Gifted Child, The American Association for Gifted Children, (Boston: D.C. Heath and Company, 1951), p. 43.

[5] Elise H. Martens, Curriculum Adjustments for Gifted Children. (Washington: United States Government Printing Office, 1946) p. 9.

[6] Witty, *loc. cit.*

self-ratings of personal and social adjustment by accelerated students be similar to those by students who had completed one grade each year? Would their teachers rate the accelerated students as highly as others on a scale of personal and social traits? Were the accelerated students as active socially as others? Did they show a marked preference for older companions? Were they chosen as frequently to play on athletic teams? Were they leaders as often as were non-accelerated students?

Were accelerated students in favor of rapid advancement in school? In what ways did they consider that it had helped them in their school work, in their social life, or in their personality development? In what ways, according to their opinions, had it hindered them?

The provisions made in our schools for children of above-average ability are of tremendous importance. The superior students of today are the potential leaders of tomorrow. Society cannot afford to let them drift through school without a challenge. Enrichment of curricula for superior students in special classes or in the regular classroom may be valuable practices. Not many schools are offering such enriched programs. In schools where a differentiated curriculum for superior students is possible, acceleration may be needed too. If accelerated students make satisfactory scholastic progress and if they develop adequately socially and personally, it would seem advisable to allow moderate acceleration of superior students as one method of meeting their needs.

CHAPTER II

RELATED LITERATURE

What do the experts say about the acceleration of superior children? Recently, Witty,[7] who is an advocate of moderate acceleration, summarized the findings of other researchers of note. The following quotations from Witty's article indicate that Trusler, Pressey, and Worcester favor a greater use of acceleration for children of above average ability.

> During the past thirty years, acceleration has again and again been proposed as a desirable way of meeting the educational needs of the gifted. Once again it is being recommended to various degrees.[8]
>
> As early as 1933, Witty and Wilkins summarized the literature on acceleration and found that moderate amounts of acceleration seemed justifiable for the gifted. J. W. Trusler[9] later recommended more frequent use of acceleration for pupils of I. Q. of 125 and above.
>
> This recommendation seems to be in accord with suggestions drawn from genetic studies[10] which show that acceleration in the elementary school up to two full grades is not associated with undesirable later adjustment in the gifted. Recently, S. L. Pressey[11]

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[7] Paul Witty, "Education for the Talented and for Leadership," Teachers' College Record, 57: 298-299, February, 1956.

[8] Ibid., p. 298.

[9] J. W. Trusler, "Pupil Acceleration in the Elementary School," Grade Teacher, 47: 16-17, 96-98, October, 1949, cited by Paul Witty, op. cit. p. 299.

[10] Lewis M. Terman and Melita H. Oden, Genetic Studies of Genius: Vol. IV, The Gifted Child Grows Up (Stanford, California: Stanford University Press, 1947) cited by Paul Witty, op. cit. p. 299.

[11] S. L. Pressey, Educational Acceleration: Appraisals and Basic Problems. Bureau of Ed. Research Monographs No. 31 (Columbus, Ohio, Ohio State University, 1949) cited by Paul Witty, loc. cit.

> studied some relationships of acceleration to success in college and concluded 'The evidence was practically unanimous that younger entrants were more likely to graduate, had the best academic records, won the most honors and presented the lowest disciplinary difficulties.'
>
> Still more recently, Dean Worcester[12] has recommended a greater use of acceleration in the education of children of above average ability. Despite such recommendations, skepticism is shown by many administrators, supervisors and teachers concerning the desirability of this practice--particularly at the high school level. However, acceleration appears to be gaining somewhat in acceptability as one way to care for the gifted.[13]

Terman and Oden[14] recommend that nearly all children of 135 I. Q. or higher should be accelerated by one or two years. Hildreth,[15] Baker[16] and others prefer special classes and enrichment of the curriculum for the students of superior mental ability. If no such provisions are made, however, "acceleration takes place as a natural phenomenon," comments Baker.[17] Of the gifted children who attend special classes, Hildreth[18] says, "These children at the end of the elementary school are, on the average, a grade or more ahead of typical pupils in school achievement, the three R's and content studies."

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[12] D. A. Worcester, The Education of Children of Above Average Ability (Lincoln, Nebraska, The University of Nebraska, 1955) cited by Paul Witty, *loc. cit.*

[13] Witty, *loc. cit.*

[14] Paul Witty, editor, The Gifted Child, The American Association for Gifted Children, (Boston: D. C. Heath and Company, 1951), p. 43-4.

[15] Gertrude Hildreth, Educating Gifted Children (New York: Harper and Bros., 1952), p. 262.

[16] Harry J. Baker, Introduction to Exceptional Children (New York: Macmillan Company, 1953) p. 280, 291.

[17] *Ibid.*, p. 290.

[18] Hildreth, *op. cit.*, p. 260-61.

Another writer, Meister,[19] favors enriched-acceleration but he sees a need for more research.

> We need more facts and more studies in the area of both raw and enriched acceleration. We will know when to take calculated risks in the education of children when we know more about the nature of intellectual and social growth in individuals of different ability levels....

In order to determine educators' opinions about acceleration of gifted students, Wilson[20] included a question regarding acceleration in a questionnaire which he sent to 1054 school administrators and to presidents and heads of departments of teacher-training colleges. Wilson received a total of 749 replies to the question:

> Do you agree with the following suggestion of Professor Terman: 'children of 135 I.Q. or higher should be promoted sufficiently to permit college entrance by the age of 17 at latest and a majority in this group would be better off to enter at 16'.

The responses indicated that 50 per cent of the educators agreed with Terman and that 50 per cent of the school administrators and 20 per cent of the college professors disagreed with him. Many of those who replied expressed concern about the social and personal development of gifted children. Wilson felt that, since 50 per cent of the educational leaders of the United States favored acceleration for gifted children, there would be noticeable soon a trend toward the more general use of

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[19] Morris Meister, "Co-operation of Secondary Schools and Colleges in the Acceleration of Gifted Students", Journal of Educational Sociology, 29:223, January, 1956.

[20] Frank T. Wilson, "Educators' Opinions About Acceleration of Gifted Students", School and Society, 80:120, October, 1954.

rapid advancement of superior students.

Several studies, similar in nature to the present study, have been made. In 1930, Engle[21] made a survey of the senior high school students in Michigan City who had had one, two or three double promotions. The twenty-nine pupils who had had one double promotion were found to have a grade-point average of 1.9 as compared to that of 1.8 for the 110 senior students. Forty-six students who were selected at random from the senior class had a grade-point average of 1.5. The sixteen students who had had two double promotions had a grade-point average of 2.2 and the one student who had had three double promotions had a grade-point average of 2.8. The accelerated students made a better average than other students.

The two weaknesses of this study seem to have been (1) the small number of cases available and (2) the failure to consider differences in mental ability. A selection of forty-six pupils having mental ability comparable to that of the accelerated group would have been a better control than the random choice of forty-six pupils from the senior class.

Eight years later, T. L. Engle[22] investigated the "Effects of School Acceleration Upon the Personality and Social Adjustments of High School and University Students". Since Engle considered that general intelligence and

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[21] Thelburn L. Engle, "A Study of the Scholastic Achievements in High School of Pupils Who Have Had Double Promotions in Elementary School", The Elementary School Journal, 31:133, October, 1930.

[22] Thelburn L. Engle, "A Study of the Effects of School Acceleration Upon the Personality and Social Adjustments of High School and University Students", Journal of Education Psychology, 29:523-539, October, 1938.

school marks probably influenced personality and social adjustments, he matched the accelerated and non-accelerated groups on four bases: (1) sex (2) grade location (3) intelligence rating within five points as measured by standardized intelligence tests (4) scholastic standing.

The mean intelligence quotient for 136 accelerated high school students was 117.1 and for 136 non-accelerated high school students, 115. The mean centile score on the A.C.E. Psychological Examination for 64 accelerated Indiana University students was 72.3 and for 64 non-accelerated University students, 72.7. Final marks for the year were used to determine scholastic standing. The values assigned to each grading for high school students were as follows: H-4, A-3, B-2, C-1, D-0. For university gradings the following schedule was used: A-3, B-2, C-1, D-0, E-0. In all cases, pairs were matched within five-tenths of a point average.

The Cowan Adolescent Personality Schedule was administered. Bound with it, there was a questionnaire including such questions as "Did you skip one or more grades in elementary school? If so, which one or ones? If so, do you think it has been a handicap to you in a social way?"[23]

The following quotation is included because of the inclusion of some of the items in the student questionnaire of the present study.

> Subjects were asked to indicate the number of social activities in which they had engaged during the past two weeks, classifying their answers under the headings:
> A. Parties without dancing
> B. Dances or parties with dancing
> C. Theatre or movies

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[23] Thelburn L. Engle, "A Study of the Effects of School Acceleration Upon the Personality and Social Adjustments of High School and University Students", Journal of Education Psychology, 29:537, October, 1938.

D. Club, committee, scout meetings not connected with the school
E. All other activities, if any[24]

Those students who felt that they had been handicapped by being accelerated were interviewed at a later date by Mr. Engle, and asked to write down their reasons for their opinions.

The results obtained in the study showed that "the mean personality schedule score for all accelerated high school subjects was 39.8 and for non-accelerated high school subjects it was 40.4. Corresponding figures for university students were 43.6 and 41.0".[25]

Engle concluded that

> "In general, it may be said that there is no apparent relationship between personality schedule scores of those entering high school or university younger than the usual age and those entering at the usual age.
>
> Although the data was not statistically reliable, on the whole there is a suggestion that accelerated students are not quite so active socially as their non-accelerated classmates. When compared with students of their own chronological age, they are found to be just as active socially. Even those who believed they were handicapped were as active socially as those who said they were not. For students believing themselves to be socially handicapped, the difficulty seems to result from a feeling of being different from their fellows".[26]

The present study attempted to measure social and personal development of accelerated students in a variety of ways rather than by the use of a personality inventory as did Engle. The accelerated students were given an opportunity to state their opinions of the effects of acceleration, as they were in Engle's study. No personal interviews were held however.

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[24] Ibid.
[25] Ibid.
[26] Ibid.

Terman[27] and others found that acceleration was favored by some authorities because it increased the child's motivation, prevented dawdling and allowed earlier graduation from college. They found that certain educators deprecated acceleration because it was thought that grade skipping made social adjustment difficult, that it promoted bookishness, that it was dangerous to physical and mental health and that it left gaps in the child's academic knowledge and skills. Terman tried to test the truth of these statements in his extensive work with gifted children.

In Terman's[28] study of the problem of acceleration, the age of high school graduation was used as the index of the degree of acceleration. Group I included those students who graduated before the age of fifteen and one-half years. Group II consisted of students who graduated between the ages of fifteen and one-half years and sixteen and one-half years. Group III or the non-accelerated students graduated at the age of sixteen and one-half years or above that age. The mean age for each of the three groups was indicated.

Accelerated students made higher scores on the childhood Binet test. The mean I.Q. for 157 accelerated boys was 156.1 whereas the mean I.Q. for 365 non-accelerated boys was 149.7. This difference was statistically significant since the critical ratio was 5.6. The corresponding results for the girls were as follows: the mean I.Q. for 145 accelerated girls was

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[27] L. M. Terman and Others, Genetic Studies of Genius. (Stanford: Stanford University Press, 1947), IV, 264

[28] Ibid., 265-266

153.1 and for 300 non-accelerated girls, 149.2. The critical ratio in this case was 3.5 which indicates that the difference was significant.[29]

The accelerated children made better marks in 1922 in the elementary grades on a three-hour battery of objective tests. The difference was significant as the critical ratio for boys was 4.9 and for girls, the critical ratio was 5.9.[30]

In referring to this study, Terman and Oden have summarized the results as follows:

> The accelerated students did better in high school, more of them graduated from college, more graduated with honors, and more of those graduating continued for graduate work. It is especially significant that at the average age of 30 years, the accelerated students were more often in the 'A' group for occupational success than were the non-accelerated students.[31]

Several measures of social adjustment were used. Parents and teachers rated the students in 1922 and again in 1928. No significant differences in social adjustment were found between the advanced group and the control group. Trained field workers rated the accelerated students in 1928 slightly lower in this regard than the control group but the difference was not statistically significant. Accelerated students were found to have a marked preference for older companions. Terman considered this preference a favorable sign. High school boys who had been accelerated did not have such mature extra-curricular interests as did those who had progressed at a normal rate. In college, this difference seemed to disappear. There seemed to be no relationship between extra-curricular

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[29] Ibid., 267

[30] Ibid., 270

[31] Paul Witty, editor, The Gifted Child, The American Association for Gifted Children, (Boston: D. C. Heath and Company, 1951), p. 43.

interests and acceleration in the case of high school girls.[32]

Terman and Oden have made the following comments with regard to this study:

> In social adjustment, there was no appreciable difference between the two groups in childhood or in adult life. Extra-curricular activities in college were only a trifle less common among the accelerated .....Even if we make some allowance for the probability that good social adjustment was sometimes a prerequisite for extra promotion, there is reason to believe that the influence of school acceleration is causing social maladjustment has been greatly exaggerated. There is no doubt that maladjustment does result in individual cases, but our data indicate that in a majority of subjects it involves chiefly a temporary feeling of inferiority which is later overcome.[33]

J. Justman[34] studied the academic progress of intellectually gifted accelerated students and non-accelerated students in senior high school. He concluded that the progress of the accelerated students was as satisfactory as that of the non-accelerated students.

> When both final marks and scores on the Regents' examinations were used as criteria of academic achievement in high school, only minor differences were found between groups of accelerants and non-accelerants. Evidently, intellectually gifted pupils who have been accelerated by one year through attendance in a special-progress class on the junior-high level can, and do, maintain themselves in academic achievement in senior high school. The same degree of mastery in the academic areas to which attention was directed is shown by accelerants despite the fact that they are a year younger, on the average, than equally gifted non-accelerants.[35]

Several experiments have shown that accelerated students are successful in college. Terman's follow-up of accelerated students, twenty-five years later has already been mentioned.

At the University of Illinois, under a selective acceleration program, a student could be admitted one or more semesters before graduation

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[32] Terman et al., op. cit., pp. 272-274.

[33] Witty, op. cit., p. 43

[34] Justman, J. "Academic Achievement of Intellectually Gifted Accelerants in Senior High School", School Review, 62: 469-473, November, 1954.

[35] Ibid., p. 473.

from high school. The student must be recommended by his high school faculty, he must have completed a certain number of units and he must demonstrate intellectual ability, social maturity, and emotional stability.

Irwin Berg and Robert Larsen[36] compared the marks made by accelerated students at the end of the freshman year with the marks made by all freshmen at the university over a three-year period and also with the marks made by 340 College of Agriculture freshmen. The accelerated students earned grades averaging slightly more than one standard deviation above the average of all University freshmen and above the average of the College of Agriculture freshmen. "It is believed that the performance of this group of accelerated students demonstrates a high level of scholastic achievement".[37]

Recently, Flesher and Pressey[38] made a follow-up study of 104 accelerated university women who had completed a four-year undergraduate program in three years from 1941 through 1945. Previous studies of this group of accelerated undergraduates had shown the following results:

> The average academic record of these 104 accelerates was found to be better than the records of 104 other women graduating in the same period who entered at the same age, made approximately the same scores on the test of general ability given at entrance, and took the same type of program, but who spent the usual four years in obtaining an undergraduate degree. The accelerates also participated reasonably in extra-curricular activities. And a follow-up a couple of years after graduation showed them beginning their careers in as promising fashion as the paired 'regular' cases.

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[36] Irwin A. Berg and Robert L. Larsen, "A Comparative Study of Students Entering College One or More Semesters Before Graduation from High School", Journal of Educational Research, 39: p. 35-38, September, 1945.

[37] Ibid., p. 39.

[38] Marie A. Flesher and S. L. Pressey, "War-Time Accelerates Ten Years After", Journal of Educational Psychology, 46: p. 228, April, 1955.

The latest follow-up study of these accelerated university students indicated the same trend.

> The accelerates in important respects actually did better than the controls: in academic record, number obtaining advanced training and number continuing a career. Previous research of the writers, and the findings of Terman regarding his gifted group, indicate that accelerates are more likely to be successful and even distinguished in their careers.
>
> In most studies above referred to, accelerates were equated with controls in initial ability, but not in ambition and energy. The person with more drive may more often accelerate and work harder in school and job. Certain other studies have been broad enough or so planned that they somewhat allow for these factors, and still the accelerates did better. Might acceleration in itself have beneficial effects?[39]

The studies cited in this chapter seemed to show that accelerated students made just as satisfactory academic progress as students of comparable mental ability who had progressed at the normal rate. Accelerated students who made significantly higher scores than the non-accelerated students in standardized intelligence tests, made higher marks in school than the control students, as one would expect. In general, the studies indicated that accelerated students were found to be as well-developed socially and personally as were the non-accelerated students.

In the present study, an attempt will be made to compare the scholastic progress of accelerated and non-accelerated Grade X students. The two groups will be equated as closely as possible with respect to mental ability. The social and personal development of accelerated and non-accelerated students will be studied with particular emphasis on such qualities as leadership and sociability.

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[39] Ibid., p. 236

CHAPTER III

THE EXPERIMENTAL PROCEDURE

A promotion questionnaire was given to all Calgary and Edmonton Grade X classes in order to identify the accelerated students.

The promotion questionnaire was completed in full by the Calgary group but it was shortened to include only items one to eight for the Edmonton group. A copy of the complete promotion questionnaire follows. A summary of the results obtained is given later in this chapter.

PROMOTION SURVEY

1. Name ______________ School ____________________ Class _______

2. Birthdate __________ (Day) ________________________ (Month) ________ (Year)

3. School attended last year ____________________________________

4. Have you ever skipped a grade? _______ What grade? _______

5. Have you ever completed two grades in one year? ___ Grades _______

6. How old were you on entering Grade I _____________ (Years) ____________ (Months)

7. Have you ever failed to pass a grade? _________ Grade _________

8. What course are you taking this year? (Commercial, general, academic, or technical) ____

9. What grade do you intend to complete?____________________________

10. What further training do you plan to take after you leave high school?____________________________

11. List in order of preference three jobs which you would like to have when you have completed your education.

    1. ____________________________
    2. ____________________________
    3. ____________________________

Signature________________________

SUMMARY OF RESPONSES

Every high school in Edmonton and in Calgary participated in the survey. The total number of promotion questionnaires which were completed and returned was 2618. Table I shows the distribution of the responses according to school.

SELECTION OF THE PRELIMINARY ACCELERATED GROUP

The first high school surveyed was Western Canada High School in Calgary. Every student in this school who indicated in his answers to the promotion questionnaire that he had progressed in school at a rate faster than normal was included in the first estimate of accelerated students. In all other schools, students who were definitely over-age because of failure before acceleration or because of late school entrance, were automatically eliminated and were not included in the preliminary accelerated group. The older accelerated students from Western Canada High School and

TABLE I

SUMMARY OF RESPONSES IN THE PROMOTION SURVEY

CITY	HIGH SCHOOL	NUMBER OF RESPONSES
EDMONTON	EASTGLEN	291
"	STRATHCONA COMPOSITE	408
"	STRATHCONA	124
"	VICTORIA COMPOSITE	448
"	WESTGLEN	239
CALGARY	CENTRAL	178
"	CRESCENT HEIGHTS	451
"	WESTERN CANADA	479
TOTAL		2618

a few from other schools who were later found to be in this category, had to be excluded but in some cases their corresponding control students were made the control students for other pupils. The choice of two preliminary control students for every accelerated student would have been a superior system.

The preliminary accelerated group was composed of ninety-eight Calgary students and ninety-two Edmonton students. Since not all Grade X students could be given the Terman-McNemar Test of Mental Ability, which was to be the final basis of comparison according to intelligence quotients, a choice of preliminary control students had to be made. The general plan was to equate the accelerated and preliminary control students according to

(a) school attended in the current year
(b) type of scholastic program
(c) sex
(d) intelligence quotient
(e) age.

In every case matching according to school attended and sex was achieved. With four exceptions, the preliminary control students were taking the same scholastic course as their corresponding accelerated students. The matching processes according to intelligence quotient and age were much more difficult.

For the Calgary group, birthdates and intelligence quotients were secured from the cumulative records filed in each school. Intelligence

quotients as measured by the Laycock Test of Mental Ability were recorded for seventy accelerated students. These students were matched with preliminary control students according to Laycock intelligence quotients within nine points. In eight cases the Otis Quick-Scoring Mental Ability Test (Gamma) was used for comparison. The differences between the Otis intelligence quotients of these accelerated students and their preliminary control students were no greater than three points. No record of intelligence quotients was available for twenty accelerated students. Preliminary control students were chosen for these without considering intelligence quotients.

Birthdates were not recorded for six Calgary students. The age of each preliminary control student chosen for ninety-one of the accelerated students was within eighteen months of the age of the corresponding accelerated student. One control student was twenty months older than the accelerated student.

Ninety-two Edmonton students were included in the first estimate of accelerated students. From the promotion survey returns, an alphabetical class list was prepared for each class in each Edmonton high school. The birthdate of each student was recorded. Age, sex, and school attended were the deciding factors in the preparation of a list of 359 students, from which the preliminary control students were to be chosen.

Matching of accelerated students and preliminary control students according to intelligence quotient was achieved in the following manner: The Grade IX General Test, namely, the Dominion Group Test of Learning Capacity--Intermediate--1950 Edition--Form A--Alberta Edition, was the

basis of comparison. The General Test raw scores for eighty-four accelerated students and for 359 other students mentioned above, were listed from the Examinations Branch records. By the method described in the *Guide to the Interpretation of the Grade IX General Test Administered June 1955*,[40] intelligence quotients were computed for the accelerated students and for 241 additional students. From the latter group, preliminary control students were selected.

The intelligence quotients of eighty-three accelerated students were matched within eight points of the intelligence quotients of the respective preliminary control students. For one student whose intelligence quotient was 152, the best available choice was a preliminary control student whose intelligence quotient was 132. For eight students for whom there was no record of a General Test score, the control students were chosen without regard to intelligence. Later, all accelerated students for whom no Grade IX records were available were eliminated from the study.

The age of seventy-eight of the preliminary control students was within eighteen months of the age of the corresponding accelerated students. The difference in age between six of the accelerated students and their respective control students ranged from nineteen months to twenty-four months. The eight students for whom no records were available were discarded, as explained above.

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[40] *Guide to the Interpretation of the Grade IX General Test Administered June 1955*, *Department of Education*, *Edmonton*, p. 2.

THE ADMINISTRATION OF THE TERMAN-McNEMAR TEST AND THE STUDENT QUESTIONNAIRES

The second phase of the study consisted in the administration of the Terman-McNemar Test of Mental Ability - Form C to the preliminary accelerated group and to the preliminary control group in each high school in Calgary and in Edmonton. Immediately following the completion of the test, the students were given a questionnaire to answer. During the preparation of the questionnaire, the information forms used by Terman were studied.[41] Cumulative record cards and student information blanks used in the Guidance Departments of the Calgary high schools were also consulted. A copy of the questionnaire follows.

QUESTIONNAIRE FOR GRADE X STUDENTS

Considerable thought is being given today to the provisions being made for students in our schools. Some people argue that students should finish school more quickly. Others think that the curriculum is now so crowded that students in Grades I to IX need more time to complete their work satisfactorily. This survey, which is a private research study, is being sent to selected Grade X students in an attempt to discover how age is related to achievement in school and to personal and social adjustment.

Please be as frank and truthful as possible so that the information you provide will be of value to future students.

Name ____________________________ School _____________________ Class _____

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[41] Terman, Lewis M. and Others, Genetic Studies of Genius. (Stanford: Stanford University Press, 1947), IV, 396-438.

1. In the left-hand column of the table below are the names of certain Grade IX subjects. Indicate with a check mark the degree of difficulty which you had with each of these subjects last year:-

Subject	Very Easy	Easy	Not Too Difficult	Difficult	Very Difficult
1. English Language					
2. English Literature					
3. Mathematics					
4. Social Studies					
5. Science					

2. List any official positions (e.g. president, secretary, leader) which you have held in:

	Home Room	School Council	School Clubs	Church Groups	Community Clubs	Summer Camps
Grade 7						
Grade 8						
Grade 9						
Grade 10						

3. List the types of athletic teams (basketball, volleyball, etc.) for which you have played. In each case indicate with a check mark the type of league in which you played.

	Type of Sport	Houseleague	Interschool	Community
Grade 7				
Grade 8				
Grade 9				

4. In how many of the following activities have you participated during the last month?

Activity	Number	Activity	Number
Parties not sponsored by a school		Sorority or fraternity meetings	
School dances		School club meetings	
Community club functions		Theatre or movies	
C.G.I.T. or Tuxis Groups		All other social activities	
Other young people's groups			
		Total	

For the following items, place a check mark immediately below the phrase which best describes you:

5. Are you quiet or talkative?

Talk very little	Rather quiet	A rather good conversationalist	A good conversationalist	Talk too much

6. Is your behavior acceptable?

Observe very high standards	Always acceptable	Usually Acceptable	Occasionally unacceptable	Frequently unacceptable

7. Are you sensitive to criticism?

Very sensitive	Rather sensitive	Can accept mild criticism	Can accept considerable criticism

8. How flexible are you?

Too easily persuaded; unstable	Always ready to experiment	Moderately adaptable	Slow to adapt to changes	Stubborn; unwilling to experiment

9. How persistent are you?

Discouraged at least obstacle	Give up too easily	Average	Persistent	Extremely persistent

10. Are you shy or confident in social relationships?

Painfully self-conscious	Timid, often embarrassed	Sometimes self-conscious	Confident	Very Confident

11. What are you like emotionally?

Always very calm	Usually calm and objective	Neutral	Controlled largely by emotion	Very excitable; high strung

12. Do you worry frequently?

Worry constantly	Worry quite often	Sometimes anxious	Rather easy-going	Extremely carefree

13. Do you find it easy to make friends?

Avoid meeting people	Indifferent about new friends	Friendly	Enjoy being with people	A very good mixer

14. What is the exact age of your four best friends in years and months? Check whether boy or girl.

		Boy	Girl
1. ____________years	____________months	____________	____________
2. ____________years	____________months	____________	____________
3. ____________years	____________months	____________	____________
4. ____________years	____________months	____________	____________

15. If you have ever skipped a grade or have completed two grades in one year, please answer the following questions:-

In what ways do you think that being younger than your fellows has helped you

(a) in your school work?

(b) in your personality?

(c) in your social life?

16. In what ways do you think that being younger than your fellows has hindered you

(a) in your school work?

(b) in your personality?

(c) in your social life?

Date ______________________ Signature ______________________

Home Address ______________________

Several changes were made in the form of the student questionnaires for Edmonton students. Item six was omitted. The date, signature and home address were deleted from the final page because such information as was needed was available on the front page of the Terman-McNemar Test. These changes made it possible to limit the questionnaire to three pages instead of four.

SUMMARY OF RESPONSES

(1) In the eight high schools of Edmonton and Calgary, 358 students completed the Terman-McNemar Test and the Questionnaire for Grade X students. This number included accelerated students and control students.

(2) Twelve of the students who were listed in the accelerated group were absent from school on the day the tests were administered.

(3) Seven students who had been accelerated were omitted from the lists by mistake.

TABLE II

RESPONSES TO QUESTIONNAIRE FOR GRADE X STUDENTS

SCHOOL	NUMBER OF RESPONSES TO QUESTIONNAIRE	ESTIMATED NUMBER OF ACCELERATED STUDENTS
EASTGLEN	18	8
STRATHCONA COMPOSITE	42	22
STRATHCONA	28	13
VICTORIA COMPOSITE	42	25
WESTGLEN	47	24
CENTRAL	37	22
CRESCENT HEIGHTS	58	33
WESTERN CANADA	86	43
TOTAL	358	190

TEACHERS' ESTIMATES OF STUDENT ADJUSTMENT

For the Western students in the Calgary group, teachers' estimates of personal and social adjustment were obtained. A rating scale similar to the one included in the Questionnaire for Grade X Students was completed by one or two teachers for each student. A copy of the Questionnaire for Teachers follows.

QUESTIONNAIRE FOR TEACHERS

Considerable thought is being given today to the provisions being made for students in our schools. Some people contend that superior students should finish school more quickly. Others think that the curriculum is now so crowded that all students need more time to complete their work satisfactorily. This survey is being sent to teachers of selected Grade X students in an attempt to discover how acceleration is related to achievement in school and to personal and social adjustment. Marks on the Grade IX examinations will be used as the criteria of success in school work.

Please rate ______________________________ on as many of the following items as possible by placing a check mark immediately below the phrase which best describes him (or her).

(1) Is he (or she) quiet or talkative?

Talks very little	Rather quiet	A rather good conversationalist	A good conversationalist	Talks too much

(2) Is he (or she) sensitive to criticism?

Very sensitive	Rather sensitive	Can accept mild criticism	Can accept considerable criticism

(3) How flexible is he (or she)?

Too easily persuaded; unstable	Always ready to experiment	Moderately adaptable	Slow to adapt to changes	Stubborn; unwilling to experiment

(4) How persistent is he (or she)?

Discouraged at least obstacle	Gives up too easily	Average	Very persistent	Seldom gives up

(5) Is he (she) shy or confident in social relationships?

Painfully self-conscious	Timid, often embarrassed	Sometimes self-conscious	Confident	Very confident

(6) What is he (she) like emotionally?

Always very calm	Usually calm and objective	Neutral	Controlled largely by emotion	Very excitable, high strung

(7) Does he (she) worry frequently?

Worries constantly	Quite often worries	Sometimes anxious	Rather easy-going	Extremely carefree

(8) Does he (she) find it easy to make friends?

Avoids meeting people	Indifferent about new friends	Friendly	Enjoys being with people	A very good mixer

Date ______________________ Signature ______________________

SUMMARY OF RESPONSES

(1) Eighty-six questionnaires were completed by teachers.

(2) For seventeen accelerated students and for the corresponding control students, two teachers' estimates were obtained.

(3) For six accelerated students and for the corresponding control students, one teacher's estimate was completed.

(4) One control student was not rated by any teacher. Consequently, the rating for the corresponding accelerated student had to be discarded.

CHAPTER IV

THE COMPOSITION OF THE ACCELERATED AND CONTROL GROUPS

A student was included in the final accelerated group if he had entered Grade I before the age of five and one-half years, or if he had entered Grade I before the age of six years and six months and later had skipped a grade or if he had entered Grade I before the age of six years and six months and later had completed two grades in one year. A student from any of the three above categories who failed later, was also included. Any pupil who failed and who was accelerated later was omitted. New Canadians who completed several grades in one year while learning the English language were excluded. Students who had entered Grade I after the age of six years and one-half and who later had skipped grades or had completed two grades in one year were also excluded.

Twenty-six students were eliminated from the final accelerated group because they were overage.

Each student in the final accelerated group of 119 pupils, was matched with a final control student with respect to the following criteria:

(a) school attended in the current year,

(b) type of present scholastic program being taken, with thirteen exceptions,

(c) sex,

(d) Terman-McNemar intelligence quotient,

(e) chronological age.

The matching of the two groups according to intelligence quotient and age will be dealt with at some length. Suitable controls could not be found for twenty-three accelerated students.

The distribution of Terman-McNemar intelligence quotients for the entire accelerated group is given in Table IV. The mean intelligence quotient for the group was 122.1 with a standard deviation of 11.1. The mean intelligence quotient was 124.0 for boys and 120.7 for girls, with standard deviations of 9.4 for boys and 11.8 for girls.

Table V indicates that the mean intelligence quotient for the control boys was 125.9, for the control girls, 119.5, and for the entire control group 122.1. The standard deviations were 7.8 for the boys, 9.3 for the girls and 9.6 for the whole group.

Probably the students having intelligence quotients below 120 should not have been accelerated. Consequently, a division was made between accelerated students having an intelligence quotient of 120 or above, which were designated as Group I (A), and those having an intelligence quotient below 120, which were designated as Group II (A). This separation made possible a fairer comparison of the superior accelerated students with the superior control students who were called Group I (C). Group II (C) included the control students corresponding to the accelerated students having intelligence quotients below 120, Group II (A). In

TABLE III

DISTRIBUTION OF FINAL ACCELERATED GROUP

SCHOOL	ESTIMATED NUMBER OF ACCELERATED STUDENTS	ABSENTEE ACCELERATED STUDENTS	OVER-AGE STUDENTS	CONTROLS MISSING	GRADE IX RECORDS MISSING	FINAL ACCELERATED GROUP		
						I.Q. 120 and over	I.Q. under 120	Total
EASTGLEN	8	0	0	1	0	4	3	7
STRATHCONA COMPOSITE	22	2	0	3	3	7	7	14
STRATHCONA	13	0	0	3	2	5	3	8
VICTORIA COMPOSITE	25	2	5	1	2	11	4	15
WESTGLEN	24	1	3	3	1	11	5	16
CENTRAL	22	2	1	5	1	6	7	13
CRESCENT HEIGHTS	33	2	4	6	0	13	8	21
WESTERN CANADA	43	3	13	1	1	11	14	25
TOTALS	190	12	26	23	10	68	51	119

TABLE IV

DISTRIBUTION OF TERMAN-McNEMAR INTELLIGENCE QUOTIENTS FOR ACCELERATED STUDENTS

TERMAN-McNEMAR I.Q.	BOYS	GIRLS	BOYS AND GIRLS
150 - 154		1	1
145 - 149	1	1	2
140 - 144		5	5
135 - 139	6	2	8
130 - 134	9	5	14
125 - 129	9	9	18
120 - 124	8	12	20
115 - 119	5	13	18
110 - 114	8	12	20
105 - 109	3	6	9
100 - 104		2	2
95 - 99		1	1
90 - 94		1	1
N	49	70	119
Mean	124.0	120.7	122.1
S.D.	9.4	11.8	11.1

TABLE V

TERMAN-McNEMAR MEAN I.Q.'S AND S.D.'S FOR CONTROL STUDENTS

	Boys	Girls	Boys and Girls
N	49	70	119
MEAN I.Q.	125.9	119.5	122.1
S.D.	7.8	9.3	9.6

every case, the accelerated students were grouped accurately according to their intelligence quotient. Each control student was included in the control group corresponding to the group in which the matching accelerated student belonged. In two instances, the intelligence quotients of the control students were slightly above 120, but they were included in Group II (C) because their matching accelerated students were in Group II (A). Similarly, in five instances, the intelligence quotients for the control students were slightly below 120 but they were placed in Group I (C) because the corresponding accelerated students were in Group I (A).

Tables VI to IX show the distribution of intelligence quotients for the two groups of control students, and the mean intelligence quotients and standard deviations for the two control groups and the two accelerated groups.

Tables VII and IX indicate that the accelerated and control groups were matched fairly well with respect to Terman-McNemar intelligence quotients. The mean intelligence quotient for Group I (A) was 129.8

TABLE VI

DISTRIBUTION OF TERMAN-McNEMAR INTELLIGENCE QUOTIENTS FOR CONTROL GROUP I (C)

TERMAN-McNEMAR I.Q.	BOYS	GIRLS	BOYS AND GIRLS
140 - 144	3	3	6
135 - 139	6	2	8
130 - 134	3	5	8
125 - 129	12	15	27
120 - 124	7	7	14
115 - 119	2	3	5
N	33	35	68

TABLE VII

TERMAN-McNEMAR MEAN I.Q.'S AND S.D.'S FOR GROUP I (A) AND GROUP I (C)

	ACCELERATED GROUP I (A) (I.Q. 120 or over)			CONTROL GROUP I (C)		
	Boys	Girls	Total	Boys	Girls	Total
N	33	35	68	33	35	68
MEAN I.Q.	129.6	130.0	129.8	132.0	127.7	129.8
S.D.	6.0	8.4	7.3	7.6	6.5	6.8

TABLE VIII

DISTRIBUTION OF TERMAN-McNEMAR INTELLIGENCE QUOTIENTS FOR CONTROL GROUP II (C)

TERMAN-McNEMAR I.Q.	BOYS	GIRLS	BOYS AND GIRLS
120 - 124	1	1	2
115 - 119	8	10	18
110 - 114	3	12	15
105 - 109	3	9	12
100 - 104		1	1
95 - 99	1	2	3
N	16	35	51

TABLE IX

TERMAN-McNEMAR MEAN I.Q.'S AND S.D.'S FOR GROUP II (A) AND GROUP II (C)

	ACCELERATED GROUP II (A) (I.Q. under 120)			CONTROL GROUP II (C)		
	Boys	Girls	Total	Boys	Girls	Total
N	16	35	51	16	35	51
MEAN I.Q.	112.6	111.4	111.8	113.3	111.3	111.9
S.D.	3.5	6.1	5.4	6.0	5.6	5.8

with a standard deviation of 7.3. The mean intelligence quotient for the control Group I (C) was 129.8 with a standard deviation of 6.8. The mean intelligence quotient for the accelerated Group II (A) was 111.8 with a standard deviation of 5.4 whereas the mean intelligence quotient for the corresponding control Group II (C) was 111.9 with a standard deviation of 5.8.

How closely matched were the pairs of accelerated and control students with respect to intelligence quotients? Table X shows the differences in the Terman-McNemar intelligence quotients for each pair. If the intelligence quotient of the accelerated student were greater than that of the control student the difference was given as a positive quantity. For ninety-eight pairs, the difference was five points or less. For eleven pairs, the difference was six points. There were ten deviating pairs in which the differences ranged from eight points to eleven.

Tables XI and XII show the differences in intelligence quotients for the pairs of superior accelerated and non-accelerated students and for the pairs of normal accelerated and non-accelerated students.

The matching of students according to chronological age presented some difficulties. The mean age for the total group of accelerated students was fourteen years and nine months. The mean age for the complete control group was fifteen years and five months. The distributions according to age are given for the four groups in Tables XIII and XIV. The greatest difference in age was found between Group I (A), the

TABLE X

DIFFERENCES IN TERMAN-McNEMAR INTELLIGENCE QUOTIENTS FOR 119 PAIRS OF ACCELERATED AND NON-ACCELERATED STUDENTS

DIFFERENCE IN I. Q.	FREQUENCY
+ 11	1
+ 10	1
+ 9	2
+ 8	3
+ 7	1
+ 6	9
+ 5	4
+ 4	4
+ 3	7
+ 2	4
+ 1	12
0	23
- 1	15
- 2	10
- 3	6
- 4	5
- 5	8
- 6	2
- 7	0
- 8	2
TOTAL FREQUENCY	119

TABLE XI

DIFFERENCES IN TERMAN-McNEMAR INTELLIGENCE QUOTIENTS FOR PAIRS OF SUPERIOR ACCELERATED AND NON-ACCELERATED STUDENTS

DIFFERENCE IN I.Q.	FREQUENCY
+ 11	1
+ 10	0
+ 9	2
+ 8	2
+ 7	1
+ 6	7
+ 5	4
+ 4	2
+ 3	5
+ 2	2
+ 1	8
0	12
- 1	5
- 2	6
- 3	4
- 4	1
- 5	5
- 6	1
TOTAL FREQUENCY	68

TABLE XII

DIFFERENCES IN TERMAN-McNEMAR INTELLIGENCE QUOTIENTS FOR PAIRS OF NORMAL ACCELERATED AND NON-ACCELERATED STUDENTS

DIFFERENCE IN I. Q.	FREQUENCY
+ 10	1
+ 9	0
+ 8	1
+ 7	0
+ 6	2
+ 5	0
+ 4	2
+ 3	2
+ 2	2
+ 1	4
0	11
- 1	10
- 2	4
- 3	2
- 4	4
- 5	3
- 6	1
- 7	0
- 8	2
TOTAL FREQUENCY	51

TABLE XIII

DISTRIBUTION OF AGES OF ACCELERATED GROUP I (A) AND CONTROL GROUP I (C)

	ACCELERATED I (A) (I.Q. 120 or above)			CONTROL I (C)		
Age in yrs. and mos.	Boys	Girls	Total	Boys	Girls	Total
15-9 to 15-11		1	1	1	1	2
15-6 to 15-8		1	1	1	3	4
15-3 to 15-5	2	2	4	12	11	23
15-0 to 15-2	4	6	10	11	11	22
14-9 to 14-11	12	5	17	8	9	17
14-6 to 14-8	4	7	11			
14-3 to 14-5	5	9	14			
14-0 to 14-2	4	2	6			
13-9 to 13-11	2	2	4			
	33	35	68	33	35	68
MEAN AGE	14-8	14-8	14-8	15-5	15-5	15-5
RANGE IN MONTHS	20	26	26	14	14	14

accelerated students having intelligence quotients of 120 or over, and the corresponding control students, Group I (C). The difference in the mean ages for these groups was nine months. A difference of six months

TABLE XIV

DISTRIBUTION OF AGES OF ACCELERATED GROUP II (A) AND CONTROL GROUP II (C)

	ACCELERATED II (A) (I.Q. Under 120)			CONTROL II (C)		
Age in yrs. and mos.	Boys	Girls	Total	Boys	Girls	Total
15-9 to 15-11		2	2	2	4	6
15-6 to 15-8	1	1	2	4	11	15
15-3 to 15-5		3	3	7	8	15
15-0 to 15-2	4	12	16	3	11	14
14-9 to 14-11	6	10	16			
14-6 to 14-8	4		4			
14-3 to 14-5		4	4		1	1
14-0 to 14-2	1	2	3			
13-9 to 13-11		1	1			
N	16	35	51	16	35	51
MEAN AGE	14-10	14-11	14-11	15-5	15-4	15-5
RANGE	24	30	30	12	21	21

was found between the mean age of Group II (A), the accelerated students having intelligence quotients below 120 and the corresponding control Group II (C).

The preceding data with respect to the chronological ages of the accelerated and non-accelerated students have compared the various groups. What was the difference in chronological age for each of the selected pairs of students? Table XV shows these differences expressed in months. For two of the 119 pairs, the difference in age between the accelerated student and the non-accelerated student was twenty-one months. In all other cases, the difference in age between the accelerated student and the control student was eighteen months or less. For ninety-nine pairs, the difference was no greater than one year.

Table XVI shows the differences in chronological age for the superior accelerated and non-accelerated students. Table XVII deals with age differences for normal accelerated and control students.

SUMMARY OF RESULTS

1. The equating of the environment for the accelerated students and control students was achieved to a certain extent by requiring that each control student be chosen from the same school. In all except thirteen cases, the accelerated student was taking the same course in Grade X as the corresponding control student.
2. The accelerated students were divided into two groups, one comprised of students having an intelligence quotient of 120 or over and the other comprised of students having an intelligence quotient under 120.
3. The mean intelligence quotient of the superior accelerated students was 129.8 with a standard deviation of 7.3 while the mean intelligence

TABLE XV

AGE DIFFERENCES IN MONTHS FOR PAIRS OF ACCELERATED AND NON-ACCELERATED STUDENTS

AGE DIFFERENCE IN MONTHS		FREQUENCY
6 to 7		1
4 to 5		2
2 to 3		1
0 to 1		7
-2 to -1		10
-4 to -3		20
-6 to -5		12
-8 to -7		15
-10 to -9		13
-12 to -11		16
-14 to -13		9
-16 to -15		6
-18 to -17		4
-20 to -19		0
-22 to -21		3
	TOTAL	119

TABLE XVI

AGE DIFFERENCES IN MONTHS FOR PAIRS OF SUPERIOR ACCELERATED AND NON-ACCELERATED STUDENTS

AGE DIFFERENCE IN MONTHS		FREQUENCY
0 to 1		2
-2 to -1		6
-4 to -3		13
-6 to -5		5
-8 to -7		7
-10 to -9		8
-12 to -11		10
-14 to -13		6
-16 to -15		6
-18 to -17		3
-20 to -19		0
-22 to -21		2
	TOTAL	68

TABLE XVII

AGE DIFFERENCES IN MONTHS FOR PAIRS OF NORMAL ACCELERATED AND NON-ACCELERATED STUDENTS

AGE DIFFERENCE IN MONTHS		FREQUENCY
6 to 7		1
4 to 5		2
2 to 3		1
0 to 1		5
-2 to -1		4
-4 to -3		7
-6 to -5		7
-8 to -7		8
-10 to -9		5
-12 to -11		6
-14 to -13		3
-16 to -15		0
-18 to -17		1
-20 to -19		0
-22 to -21		1
	TOTAL	51

quotient for the superior control students was 129.8 with a standard deviation of 6.8. For the inferior groups, the mean intelligence quotient of accelerated students was 111.8 with a standard deviation of 5.4 and of the control students, 111.9 with a standard deviation of 5.8.

4. The difference in Terman-McNemar intelligence quotients for each accelerated student and the corresponding control student was recorded and tabulated. For 109 pairs, the difference was six points or less. For ten pairs, the differences ranged from eight points to eleven.
5. The mean age for the superior accelerated students was fourteen years and eight months whereas the mean age for the superior control students was fifteen years and five months. The mean ages for the inferior students were as follows: accelerated students, fourteen years and eleven months and control students, fifteen years and five months.
6. The difference in chronological age for each selected pair of students was considered. In two cases, the difference in age between the accelerated student and the control student was twenty-one months. For all other pairs, the difference was eighteen months or less. For ninety-nine pairs, the difference was no greater than one year.

CHAPTER V

THE METHODS OF ACCELERATION

The promotion survey of Grade X students in Calgary and Edmonton showed that students had been accelerated in most cases in one of three ways, namely, by the completion of two grades in one year, by skipping a grade, or by entering school before the age of five and one half years. In addition, a few students had had double promotions. The methods of acceleration are summarized in Table XVIII, which gives the number and percentage for each category. Group I (A) is used to designate the accelerated students whose intelligence quotients were 120 or over and Group II (A) is used to designate the accelerated students whose intelligence quotients were below 120. See Table XVIII, page 49.

SUMMARY OF FINDINGS

1. Approximately 48 per cent of the accelerated group had completed two grades in one year. Two of these students or 3 per cent failed in a later grade.
2. Twenty-two per cent of the accelerated students had skipped a grade and of this group, about 3 per cent failed in a subsequent grade. In both of the above types of acceleration, the number of failures was small but all of them were students whose intelligence quotients were above 120.
3. Of the four students who had had two double promotions, two failed in a later grade, although both failures had intelligence quotients above 120.

TABLE XVIII

METHODS OF ACCELERATION

METHODS OF ACCELERATION	GROUP 1 (A) I.Q. 120 or over				GROUP 2 (A) I.Q. under 120				TOTAL ACCELERATED GROUP			
	Girls	Boys	G. and B.	%	Girls	Boys	G. and B.	%	Girls	Boys	G. and B.	%
Two grades in one year	19	14	33	48.5	15	7	22	43.1	34	21	55	46.2
Two grades in one year and a later failure	1	1	2	2.9					1	1	2	1.7
One grade skipped	6	8	14	20.6	6	5	11	21.6	12	13	25	21.0
One grade skipped and a later failure		1	1	1.5						1	1	0.8
Early school entrance	8	5	13	19.1	10	3	13	25.5	18	8	26	21.8
Early school entrance and a later failure					4	1	5	9.8	4	1	5	4.2
Two double promotions	1	1	2	2.9					1	1	2	1.7
Two double promotions and a later failure		2	2	2.9						2	2	1.7
Three grades in one year		1	1	1.5						1	1	0.8
TOTALS	35	33	68		35	16	51		70	49	119	

4. Over 25 per cent of the accelerated group had entered school before the age of five and one-half years. Sixteen per cent of those who had entered school early, failed in a later grade. The failures were all students whose intelligence quotients were below 120.
5. Thirty-one per cent of the girls were allowed to enter school before the age of five and one-half years. Eighteen per cent of the boys were permitted to begin school before the age of five and one-half years.
6. Twenty-eight per cent of the boys as compared to seventeen per cent of the girls, skipped a grade.

CHAPTER VI

THE ACADEMIC PROGRESS OF ACCELERATED STUDENTS

Academic progress was determined by the results of the Grade IX final departmental examinations. The marks obtained by the accelerated students and the control students in Reading, Literature, Language, Social Studies, Mathematics, and Science were recorded from the files of the Calgary high schools and from the Examinations Branch. Letter gradings were given the following values: H-5, A-4, B-3, C-2, D-1. The method of comparison was similar to that employed by C. Safran in a "Study of the Value of Kindergarten Training in the Calgary School System".[42]

For each of the six subjects, two tables were constructed. The first table given for each subject, indicates the marks made by Group I (A), the superior accelerated students having intelligence quotients of 120 or over, and the marks made by Group I (C), the corresponding control students. The second table for each subject shows the marks made by Group II (A), the normal accelerated group having intelligence quotients below 120, and the marks made by Group II (C), the corresponding control students. Tables XIX to XXX inclusive give a detailed comparison of the marks obtained by the four groups.

Included in this chapter is a study of the marks obtained in the Grade IX final examinations by students who had been accelerated in three different ways, namely, by early school entrance, by skipping a grade, and

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[42] Safran, C. "Study of the Value of Kindergarten Training in the Calgary School System". Calgary School Board pamphlet, pp. 4-5.

by completing two grades in one year.

The data in Table XIX indicate that the mean score made by the superior accelerated students in the Reading Test was lower than the mean score made by the superior control students. The mean scores for the accelerated and control groups were 4.398 and 4.60, respectively. The standard deviations were 0.55 and 0.65.

TABLE XIX

GRADE IX READING MARKS OF SUPERIOR ACCELERATED STUDENTS AND SUPERIOR CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group I (A) Students	29	37	2			68		
Total Weight	145	148	6			299	4.4	0.55
Number of Group I (C) Students	47	15	6			68		
Total Weight	235	60	18			313	4.6	0.65

The mean scores in Reading for the normal accelerated students and for the normal control students were 3.31 and 3.47, respectively. The standard deviations were 0.7 and 0.6.

TABLE XX

GRADE IX READING MARKS OF NORMAL ACCELERATED STUDENTS AND NORMAL CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group II (A) Students	2	17	27	5		21		
Total Weight	10	68	81	10		169	3.31	0.7
Number of Group II (C) Students	1	24	24	2		51		
Total Weight	5	96	72	4		177	3.47	0.6

TABLE XXI

GRADE IX LITERATURE MARKS OF SUPERIOR ACCELERATED STUDENTS, GROUP I (A) AND CONTROL STUDENTS, GROUP I (C)

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group I (A) Students	26	37	4			67		
Total Weight	130	148	12			290	4.33	0.58
Number of Group I (C) Students	34	29	4			67		
Total Weight	170	116	12			298	4.45	0.65

The mean grading obtained in the Grade IX final examination in Literature by superior accelerated students was 4.33 with a standard deviation of 0.58; whereas the mean grading obtained by the corresponding control students was 4.45 with a standard deviation of 0.61

TABLE XXII

GRADE IX LITERATURE MARKS OF NORMAL
ACCELERATED STUDENTS, GROUP II (A), AND CONTROL STUDENTS, GROUP II (C)

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group II (A) Students	3	20	24	4		51		
Total Weight	15	80	72	8		175	3.43	0.72
Number of Group II (C) Students	3	18	28	2		51		
Total Weight	15	72	84	4		175	3.43	0.67

Normal accelerated students obtained the same mean grading, (3.43), in the Literature test as that obtained by the normal control students. The standard deviations were 0.72 and 0.67 respectively.

In the Language test, a mean grading of 4.09 with a standard deviation of 0.74 was obtained by the superior accelerated students as compared with a mean grading of 4.4 and a standard deviation of 0.69 for the control group. The results of the Language test showed the greatest discrepancy between the achievement of the accelerated students and the control students.

TABLE XXIII

GRADE IX LANGUAGE MARKS OF SUPERIOR ACCELERATED STUDENTS, GROUP I (A), AND CONTROL STUDENTS, GROUP I (C)

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group II (A) Students	20	36	10	2		68		
Total Weight	100	144	30	4		278	4.09	0.74
Number of Group II (C) Students	21	37	10			68		
Total Weight	105	148	30			283	4.4	0.69

TABLE XXIV

GRADE IX LANGUAGE MARKS OF NORMAL ACCELERATED STUDENTS, GROUP II (A), AND CONTROL STUDENTS GROUP II (C)

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group II (A) Students	7	20	21	3		51		
Total Weight	35	80	63	6		184	3.61	0.79
Number of Group II (C) Students	4	25	18	4		51		
Total Weight	20	100	54	8		182	3.57	0.67

The mean grading obtained in the Language test by the normal accelerated students was 3.61, a mark which was slightly higher than that of 3.57 obtained by the normal control students. The standard deviations were 0.79 and 0.67, respectively.

TABLE XXV

GRADE IX SOCIAL STUDIES MARKS OF
SUPERIOR ACCELERATED STUDENTS AND SUPERIOR CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group I (A) Students	25	29	11	1	1	67		
Total Weight	125	116	33	2	1	277	4.16	0.85
Number of Group I (C) Students	27	33	7			67		
Total Weight	135	132	21			288	4.31	0.65

The mean scores in Social Studies were 4.16 for superior accelerated students and 4.31 for superior control students. The standard deviations were 0.85 and 0.65.

TABLE XXVI

GRADE IX SOCIAL STUDIES MARKS
OF NORMAL ACCELERATED STUDENTS AND NORMAL CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group II (A) Students	2	17	28	4		51		
Total Weight	10	68	84	8		170	3.33	0.67
Number of Group II (C) Students	7	19	21	4		51		
Total Weight	35	76	63	8		182	3.57	0.82

The mean scores in Social Studies were 3.33 for normal accelerated students and 3.57 for normal control students. The standard deviations were 0.67 and 0.82.

TABLE XXVII

GRADE IX MATHEMATICS MARKS
OF SUPERIOR ACCELERATED STUDENTS AND SUPERIOR CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group I (A) Students	20	28	18	2		68		
Total Weight	100	112	54	4		270	3.97	0.82
Number of Group I (C) Students	17	36	15					
Total Weight	85	144	45			274	4.03	0.68

In Mathematics, the superior accelerated students obtained a mean grading of 3.97 with a standard deviation of 0.82. In the same test, the superior control students received a mean grading of 4.03 with a standard deviation of 0.68.

TABLE XXVIII

GRADE IX MATHEMATICS MARKS OF NORMAL ACCELERATED STUDENTS AND NORMAL CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group II (A) Students	4	14	27	6		51		
Total Weight	20	56	81	12		169	3.31	0.78
Number of Group II (C) Students	5	17	21	6	2	51		
Total Weight	25	68	63	12	2	170	3.33	0.93

The mean scores in Mathematics were 3.31 for normal accelerated students, and 3.33 for normal control students. The standard deviations were 0.78 and 0.93.

TABLE XXIX

GRADE IX SCIENCE MARKS OF SUPERIOR ACCELERATED STUDENTS AND BY SUPERIOR CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group I (A) Students	18	25	21	4		68		
Total Weight	90	100	63	8		261	3.84	0.87
Number of Group I (C) Students	26	26	14	2		68		
Total Weight	130	104	42	4		280	4.11	0.87

In Science, the superior accelerated students obtained a mean score of 3.84 with a standard deviation of 0.87. In the same test, the superior control students received a mean score of 4.11 with a standard deviation of 0.87.

TABLE XXX

GRADE IX SCIENCE MARKS OF NORMAL ACCELERATED STUDENTS AND BY NORMAL CONTROL STUDENTS

Letter Grading	H	A	B	C	D	Total	Mean	S.D.
Numerical Value	5	4	3	2	1			
Number of Group I (A) Students	1	12	31	7		51		
Total Weight	5	48	93	14		160	3.14	0.65
Number of Group I (C) Students	5	16	23	6	1	51		
Total Weight	25	64	69	12	1	171	3.35	0.88

The normal accelerated students obtained a mean score in Science of 3.14 with a standard deviation of 0.65; whereas the normal control students received a mean score of 3.35 with a standard deviation of 0.88.

The significance of the differences between the mean scores obtained by accelerated students and control students in both the superior and normal divisions was computed in terms of critical ratios. Table XXXI summarizes the data already given and includes the critical ratios for the differences.

The superior control group obtained a higher average mark in all of the six subjects than did the superior accelerated group. The difference in average marks was least significant in mathematics. The differences in Literature, Social Studies, and Science were not statistically significant. In Reading, the difference was significant at the 5 per cent level. The superior control students were significantly better than the superior accelerated students in Language. The difference was significant at the 1.24 per cent level.

None of the differences found between the mean gradings obtained by accelerated students whose intelligence quotients were less than 120, and those obtained by the corresponding control students, were statistically significant. In Language, the accelerated students had a slightly higher mean mark than did the control students. The means for marks obtained in Literature by the two groups were equal. The difference in Mathematics was very small. The greatest difference was found in Social Studies but this was not significant. Although in four subjects the control students

TABLE XXXI

THE SIGNIFICANCE OF DIFFERENCES IN MEAN SCORES OBTAINED IN GRADE IX FINALS BY ACCELERATED AND CONTROL STUDENTS

SUPERIOR GROUPS	READING	LIT.	LANG.	SOC. ST.	MATH	SCI.
ACCELERATED						
MEAN SCORE	4.4	4.33	4.1	4.16	3.97	3.84
STANDARD DEVIATION	0.55	0.58	0.74	0.65	0.82	0.87
CONTROL GROUP						
MEAN SCORE	4.6	4.45	4.4	4.31	4.03	4.11
STANDARD DEVIATION	0.65	0.61	0.69	0.85	0.68	0.87
CRITICAL RATIO	1.96	1.18	2.5	1.23	0.46	1.8
NORMAL GROUPS						
ACCELERATED						
MEAN SCORE	3.31	3.43	3.61	3.33	3.31	3.14
STANDARD DEVIATION	0.7	0.72	0.79	0.67	0.78	0.65
CONTROL GROUP						
MEAN SCORE	3.47	3.43	3.57	3.57	3.33	3.35
STANDARD DEVIATION	0.6	0.67	0.67	0.82	0.93	0.88
CRITICAL RATIO	1.23		0.29	1.71	0.11	1.4

made better marks on the average than did accelerated students, the differences were not significant.

The premise that only students who have intelligence quotients above 120 should be accelerated is generally accepted by educators. Consequently, in the consideration of the relative effects of the three methods of acceleration on the results obtained in the Grade IX examinations, only the superior groups were compared. None of the failures in any of the three groups was included. Those who had had double promotions were also excluded.

In Table XXXII the mean age and the mean intelligence quotient (Terman-McNemar) is given for each group, classified according to the method of acceleration. The mean age of the students who had completed two grades in one year was fourteen years and eight months. The mean age of those who had skipped a grade was fourteen years and nine months. Those who had entered school early were slightly younger, having a mean age at the time of the study of fourteen years and seven months. For the three groups, the mean intelligence quotients were 130.5, 130.9 and 127.4, respectively.

The mean grading obtained in every examination subject by the three groups is given in Table XXXII. The number of students in each group is given in parentheses under each mean. In two instances, the mark for one individual was missing.

Although the students who entered school at an early age made a higher mean mark in Literature than those who skipped a grade, their mean

TABLE XXXII

GRADE IX RESULTS OBTAINED BY THREE GROUPS OF STUDENTS ACCELERATED BY DIFFERENT METHODS

METHOD OF ACCELERATION	MEAN AGE (Yrs-Mos)	MEAN I.Q. (Terman-McNemar)	MEANS FOR GRADE IX FINAL EXAMINATIONS					
			READING	LIT.	LANG.	SOC. ST.	MATH.	SCIENCE
TWO GRADES IN ONE YEAR	14-8	130.5	4.48 (33)	4.45 (33)	4.21 (33)	4.24 (33)	4.09 (33)	3.88 (33)
ONE GRADE SKIPPED	14-9	130.9	4.5 (14)	4.14 (14)	4.07 (14)	4.29 (14)	4.07 (14)	3.9 (14)
EARLY SCHOOL ENTRANCE	14-7	127.4	4.23 (13)	4.27 (12)	3.77 (13)	4.0 (12)	3.46 (13)	3.38 (13)

mark in this subject was lower than that made by those who completed two grades in one year. In all other subjects, the mean marks of the early entrants were lower than those of either the students who skipped a grade or those who completed two grades in one year.

SUMMARY OF RESULTS

1. The differences in academic progress between the superior accelerated group and the superior control group were greater than the differences between the normal accelerated group and the normal control group.
2. The difference in marks obtained in Reading by the superior accelerated group and the superior control group was significant at the 5 per cent level. The non-accelerated students made higher marks in Reading than did the accelerated students.
3. The difference in marks obtained in Language by the superior accelerated group and the superior control group was significant at the 1.24 per cent level. The difference in Language marks was in favor of the non-accelerated students.
4. Students who entered school at an earlier age than that of five and one-half years made lower marks, in general, than either those who skipped a grade or those who completed two grades in one year.
5. The most significant finding seems to be that generally the differences in academic achievement were not statistically significant.

CHAPTER VII

THE SOCIAL AND PERSONAL DEVELOPMENT OF ACCELERATED STUDENTS

The social and personal development of pupils was studied in several ways. The accelerated and control students were asked, by questionnaire, to state the number of official positions which they had held during the preceding four years, to list the athletic teams for which they had played during the same period of time, to enumerate the social activities in which they had participated during the previous month and to give the ages of their four best friends. This chapter contains a consideration of the students' answers to these questions.

NUMBER OF OFFICIAL POSITIONS HELD

The accelerated students in the superior group, having intelligence quotients above 120, held fewer official positions than did the corresponding control students. One accelerated student did not complete the questionnaire. The total number of superior accelerated pupils was, therefore, sixty-seven instead of sixty-eight. Table XXXIII shows the frequency distribution of official positions held by superior accelerated and control students. Medians as well as means were given in order to eliminate any distortion by a few atypical cases. The mean number of official positions held by superior accelerated students was 1.6 as compared with 2.5, the

TABLE XXXIII

OFFICIAL POSITIONS HELD BY SUPERIOR ACCELERATED AND SUPERIOR CONTROL STUDENTS

NUMBER OF OFFICIAL POSITIONS	SUPERIOR ACCELERATES			SUPERIOR CONTROLS		
	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
11					1	1
10						
9						
8		2	2	1		1
7	1		1	1	1	2
6	1	3	4		5	5
5	1		1	1	2	3
4	1	1	2	6	3	9
3	2	1	3	4	3	7
2	1	7	8	4	7	11
1	10	11	21	2	6	8
0	15	10	25	13	7	20
TOTAL	32	35	67	32	35	67
MEAN	1.3	1.9	1.6	2.1	2.6	2.5
MEDIAN	1.1	1.7	1.4	2.4	2.7	2.5

mean number held by superior control students. The median scores for superior accelerated and control students were 1.4 and 2.5, respectively. If the number of official positions held can be considered as a measure of leadership ability, the data indicate that, in this characteristic, the control students surpassed the accelerated students.

The number of official positions held by normal accelerated students was almost as great as the number held by normal control students. The means for the two groups were, as shown in Table XXIV, 2.2 and 2.1 while the medians were 2.2 and 2.3, respectively. The normal accelerated boys exceeded the normal control boys in the number of official positions held.

MEMBERSHIP IN ATHLETIC TEAMS

The number of athletic teams on which the accelerated girls played was smaller than was the number on which the control girls played, regardless of the group, whether superior or normal. The number of athletic teams to which the accelerated boys belonged was not appreciably smaller than the number to which the control boys belonged. Tables XXXV and XXXVI summarize the findings regarding athletic team memberships of accelerated and control students. A certain degree of social maturity was thought necessary for membership in an athletic team. Accelerated girls had a lower rating in this respect than did the control girls but accelerated boys showed no deficiency.

TABLE XXXIV

OFFICIAL POSITIONS HELD BY NORMAL ACCELERATED AND NORMAL CONTROL STUDENTS

NUMBER OF OFFICIAL POSITIONS	NORMAL ACCELERATES			NORMAL CONTROLS		
	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
14	1		1			
13						
9						
8					2	2
7		2	2		1	1
6		1	1	1	1	2
5		3	3		2	2
4	2	1	3	2	2	4
3	2	4	6	3	5	8
2	2	9	11	1	6	7
1	3	8	11		8	8
0	6	7	13	9	8	17
TOTAL	16	35	51	16	35	51
MEAN	2.2	2.2	2.2	1.6	2.3	2.1
MEDIAN	1.8	2.3	2.2	0.9	2.3	2.3

PARTICIPATION IN SOCIAL ACTIVITIES

Compared with the control students, the accelerated students were less active socially. Several students, two of whom were accelerated pupils and one of whom was a control pupil, stated that they had engaged in more than thirty social activities in the previous month. One boy gave his total number of social events as seventy. Because of the great weight of these unusual cases, the means do not give as true a picture of the total groups as do the medians. Table XXXVII shows that the median score for superior accelerated boys was 7.8 whereas the median score for superior control boys was 11.8. Superior accelerated girls were almost as active socially as the control girls. The medians for superior accelerated girls and for superior control girls were 11.3 and 11.9, respectively.

When normal accelerated students were compared with normal control students, the accelerated students were once again found to have taken part in fewer social events. However, the discrepancy was more marked for girls than for boys, among students having intelligence quotients below 120. The data indicate that, in general, the accelerated students participated in fewer social events.

AGE OF FRIENDS

In the student questionnaire, each subject was requested to indicate in years and months the age of his four best friends and to state whether each of these was a girl or a boy. Friends who were listed as

TABLE XXXV

ATHLETIC TEAM MEMBERSHIP OF SUPERIOR ACCELERATED STUDENTS AND SUPERIOR CONTROL STUDENTS

NUMBER	SUPERIOR ACCELERATES			SUPERIOR CONTROLS		
OF TEAMS	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
24 - 26				1		1
21 - 23				1		1
18 - 20	1		1		2	2
15 - 17		1	1	1	1	2
12 - 14	4	1	5	4	1	5
9 - 11	1	1	2	3	2	5
6 - 8	7	2	9	5	9	14
3 - 5	7	13	20	7	5	12
0 - 2	12	17	29	10	15	25
TOTAL	32	35	67	32	35	67
MEAN	5.3	3.5	4.4	6.8	5.3	6.0
MEDIAN	4.9	3.1	3.8	4.8	4.8	5.3

TABLE XXXVI

ATHLETIC TEAM MEMBERSHIP OF NORMAL ACCELERATED STUDENTS AND NORMAL CONTROL STUDENTS

NUMBER	NORMAL ACCELERATES			NORMAL CONTROLS		
OF TEAMS	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
21 - 23		1	1			
18 - 20		1	1			
15 - 17					1	1
12 - 14	2		2	2	1	3
9 - 11	2	1	3	2	3	5
6 - 8	2	2	4	5	7	12
3 - 5	6	15	21	3	12	15
0 - 2	4	15	19	4	11	15
TOTAL	16	35	51	16	35	51
MEAN	5.5	4.0	5.0	6.2	4.8	5.2
MEDIAN	4.5	3.6	4.0	6.2	4.8	5.2

TABLE XXXVII

PARTICIPATION OF SUPERIOR ACCELERATED STUDENTS AND SUPERIOR CONTROL STUDENTS IN SOCIAL ACTIVITIES

NUMBER OF SOCIAL ACTIVITIES	SUPERIOR ACCELERATES			SUPERIOR CONTROLS		
	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
30 and over	1		1		1	1
27 - 29		1	1			
24 - 26	1	1	2	2	1	3
21 - 23	1	2	3	2		2
18 - 20	2	5	7	3	4	7
15 - 17	1	2	3	6	4	10
12 - 14		4	4	2	7	9
9 - 11	5	8	13	6	11	17
6 - 8	11	8	19	3	4	7
3 - 5	6	2	8	5	1	6
0 - 2	4	2	6	3	2	5
TOTAL	32	35	67	32	35	67
MEAN	10.2	12.1	11.2	11.8	12.3	12.1
MEDIAN	7.8	11.3	9.2	11.8	11.9	11.8

TABLE XXXVIII

PARTICIPATION OF NORMAL ACCELERATED STUDENTS AND NORMAL CONTROL STUDENTS IN SOCIAL ACTIVITIES

NUMBER OF SOCIAL ACTIVITIES	NORMAL ACCELERATES			NORMAL CONTROLS		
	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
30 - 33	1		1			
27 - 29		1	1			
24 - 26						
21 - 23	3	1	4		1	1
18 - 20		1	1	3	2	5
15 - 17	1	4	5		10	10
12 - 14	1	6	7	2	4	6
9 - 11	3	8	11	7	8	15
6 - 8	3	6	9	3	5	8
3 - 5	3	7	10	1	5	6
0 - 2	1	1	2			
TOTAL	16	35	51	16	35	51
MEAN	11.9	10.3	10.8	11.1	11.6	11.5
MEDIAN	10.5	10.5	10.4	11.0	11.9	11.4

TABLE XXXIX

AGE OF FRIENDS

TYPES CHOSEN	CHOICES OF SUPERIOR GROUPS				CHOICES OF NORMAL GROUPS			
	ACCELERATED GIRLS		CONTROL GIRLS		ACCELERATED GIRLS		CONTROL GIRLS	
	N	Total Choices	N	Total Choices	N	Total Choices	N	Total Choices
OLDER GIRLS	35	84	31	67	35	86	33	67
YOUNGER GIRLS	5	7	17	26	9	12	20	27
OLDER BOYS	24	34	23	31	26	33	27	42
YOUNGER BOYS							1	1
	ACCELERATED BOYS		CONTROL BOYS		ACCELERATED BOYS		CONTROL BOYS	
	N	Total Choices	N	Total Choices	N	Total Choices	N	Total Choices
OLDER GIRLS	7	9	9	10	5	6	3	3
YOUNGER GIRLS	6	7	2	2	2	2	4	5
OLDER BOYS	30	87	26	62	15	39	16	44
YOUNGER BOYS	9	13	16	28	6	7	4	5

being the same age as the subject were omitted completely. In some cases, the answers indicated doubt regarding the exact age of friends. These were also disregarded. Table XXXIX summarizes the data regarding age of friends.

More accelerated girls in the superior group reported that among their four best friends there were girls older than themselves. Similarily, accelerated boys in the superior group had more older boy friends than did the corresponding control boys. The same trend towards the choice of older companions was noticeable among the normal accelerated girls and boys.

SUMMARY OF FINDINGS

1. Fewer official positions were held by accelerated students.
2. Accelerated boys belonged to almost as many athletic teams as the control boys did. Accelerated girls did not play on as many athletic teams as the control girls did.
3. Compared with the control students, accelerated students were less active socially.
4. A trend towards the choice of older companions was noticeable among accelerated students as compared with the control students.

CHAPTER VIII

STUDENTS' SELF-RATING OF SOCIAL AND PERSONAL DEVELOPMENT

A rating scale of personal and social characteristics was included in the student questionnaire as another measure of adjustment. For each of the eight items in the scale, a chart shows the total number of responses, and the number and percentage of responses given under each category. A few students did not answer all of the questions.

Table XL shows that accelerated students rated themselves regarding talkativeness in much the same way as did control students although a few more control students classified themselves as 'too talkative'.

According to Table XLI, a few more superior accelerated girls considered themselves 'very sensitive'. In general, the self-ratings of accelerated students with respect to sensitivity seemed to follow the same trends as the self-ratings of the control students.

In the study of flexibility, (see Table XLIII), two items may have been ambiguous. The heading 'always ready to experiment', preceded 'moderately adaptable'. Forty-eight per cent of the superior accelerated students rated themselves as 'always ready to experiment'; whereas only 28.1 per cent of the superior control students gave themselves this designation. Among the normal groups, only 15 per cent of the accelerated students stated that they were 'always ready to experiment', as compared with 26 per cent of the control students. Perhaps the data indicate that superior accelerated students rate themselves higher in adaptability than

do the control students. The trend seems to be reversed in the case of the students having intelligence quotients under 120.

The data in Table XLIII, which gives the self-ratings of persistence by accelerated and non-accelerated students, seem to suggest that normal accelerated students feel that they give up too easily. Accelerated students whose intelligence quotients were less than 120, rated themselves much lower in persistence than did the corresponding control students. A few more superior accelerated students rated themselves as 'extremely persistent'.

Accelerated students seem to be more self-confident than the control students. Fewer accelerated students rated themselves as 'painfully self-conscious', or 'timid, often embarrassed'.

Provided that the students understood that the heading 'neutral', was supposed to indicate the mid-point on the scale of emotionality, the data in Table XLV would indicate that fewer accelerated students (34.9 per cent) rated themselves as 'calm and objective', than did control students (41.3 per cent).

The self-ratings of anxiety as shown in Table XLVI showed similar trends for accelerated and control students.

More accelerated students than control students rated themselves under the heading 'enjoy being with people'. A few superior accelerated students indicated that they 'avoided meeting people'. More control students classified themselves in the top category as 'a very good mixer'.

TABLE XL

SELF-RATINGS OF TALKATIVENESS OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Talks very little	Rather quiet	A rather good conversationalist	A good conversationalist	Talks too much
SUPERIOR ACCELERATED						
Boys	28	1	8	11	6	2
Girls	35	0	11	12	8	4
TOTAL	63	1	19	23	14	6
PER CENT		1.6	30.2	36.5	22.2	9.5
SUPERIOR CONTROL						
Boys	28		10	8	8	2
Girls	35		9	18	1	7
TOTAL	63		19	26	9	9
PER CENT			30.2	41.3	14.2	14.2
NORMAL ACCELERATED						
Boys	16	1	5	7	3	0
Girls	34	1	9	12	8	4
TOTAL	50	2	14	19	11	4
PER CENT		4	28	38	22	8
NORMAL CONTROL						
Boys	16	0	4	5	5	2
Girls	34	2	9	12	7	4
TOTAL	50	2	13	17	12	6
PER CENT		4	26	34	24	12

TABLE XLI

SELF-RATINGS OF SENSITIVITY OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Very sensitive	Rather sensitive	Can accept mild criticism	Can accept considerable criticism
SUPERIOR ACCELERATED					
Boys	30	0	3	18	9
Girls	35	3	5	18	9
TOTAL	65	3	8	36	18
PER CENT		4.6	12.8	55.4	27.7
SUPERIOR CONTROL					
Boys	30	0	3	18	9
Girls	35	1	7	19	8
TOTAL	65	1	10	37	17
PER CENT		1.5	15.4	56.9	26.2
NORMAL ACCELERATED					
Boys	16	1	2	9	4
Girls	35	2	4	21	8
TOTAL	51	3	6	30	12
PER CENT		5.9	11.8	58.8	23.5
NORMAL CONTROL					
Boys	16	0	1	10	5
Girls	35	3	4	21	7
TOTAL	51	3	5	31	12
PER CENT		5.9	9.8	60.8	23.5

TABLE XLII

SELF-RATINGS OF FLEXIBILITY OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Too easily persuaded; unstable	Always ready to experiment	Moderately adaptable	Slow to adapt to changes	Stubborn; unwilling to experiment
SUPERIOR ACCELERATED						
Boys	30	1	12	14	2	1
Girls	34	0	19	15	0	0
TOTAL	64	1	31	29	2	1
PER CENT		1.6	48.4	45.3	3.1	1.6
SUPERIOR CONTROL						
Boys	30	0	10	19	1	
Girls	34	1	8	22	3	
TOTAL	64	1	18	41	4	
PER CENT		1.6	28.1	64.1	6.2	
NORMAL ACCELERATED						
Boys	15	0	5	8	2	0
Girls	35	4	10	18	1	2
TOTAL	50	4	15	26	3	2
PER CENT		8	30	52	6	4
NORMAL CONTROL						
Boys	15	1	8	4	2	
Girls	35	3	18	13	1	
TOTAL	50	4	26	17	3	
PER CENT		8	52	34	6	

TABLE XVIII

SELF-RATINGS OF PERSISTENCE OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Discouraged at least obstacle	Gives up too easily	Average	Persistent	Extremely persistent
SUPERIOR ACCELERATED						
Boys	30		2	13	12	3
Girls	34		2	13	16	3
TOTAL	64		4	26	28	6
PER CENT			6.2	40.6	43.8	9.4
SUPERIOR CONTROL						
Boys	30		4	11	15	0
Girls	34		1	15	15	3
TOTAL	64		5	26	30	3
PER CENT			7.8	40.6	46.9	4.7
NORMAL ACCELERATED						
Boys	16	0	10	3	3	
Girls	35	3	21	10	1	
TOTAL	51	3	31	13	4	
PER CENT		5.9	60.8	25.5	7.8	
NORMAL CONTROL						
Boys	16		0	12	4	0
Girls	35		2	20	12	1
TOTAL	51		2	32	16	1
PER CENT			3.9	62.7	31.4	2

TABLE XLIV

SELF-RATINGS OF SHYNESS OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Painfully self-conscious	Timid, often embarrassed	Sometimes self-conscious	Confident	Very confident
SUPERIOR ACCELERATED						
Boys	30	1	1	22	4	2
Girls	34	1	2	24	7	0
TOTAL	64	2	3	46	11	2
PER CENT		3.1	4.7	71.9	17.2	3.1
SUPERIOR CONTROL						
Boys	30	1	4	16	8	1
Girls	34	1	4	23	6	0
TOTAL	64	2	8	39	14	1
PER CENT		3.1	12.5	60.9	21.9	1.6
NORMAL ACCELERATED						
Boys	16	1	0	8	6	1
Girls	35	1	1	26	6	1
TOTAL	51	2	1	34	12	2
PER CENT		3.9	2	66.7	23.5	3.9
NORMAL CONTROL						
Boys	16	0	1	11	4	0
Girls	35	2	5	18	9	1
TOTAL	51	2	6	29	13	1
PER CENT		3.9	11.8	56.8	25.5	2

TABLE XLV

SELF-RATINGS OF EMOTIONALITY OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Always very calm	Usually calm and objective	Neutral	Controlled largely by emotion	Very excitable; high strung
SUPERIOR ACCELERATED						
Boys	30	1	16	10	3	0
Girls	33	0	6	16	10	1
TOTAL	63	1	22	26	13	1
PER CENT		1.6	34.9	41.3	20.6	1.6
SUPERIOR CONTROL						
Boys	30	1	14	9	5	1
Girls	33	1	12	12	7	1
TOTAL	63	2	26	21	12	2
PER CENT		3.2	41.3	33.3	19	3.2
NORMAL ACCELERATED						
Boys	16		6	10	0	0
Girls	35		11	14	7	3
TOTAL	51		17	24	7	3
PER CENT			33.3	47.1	13.7	5.9
NORMAL CONTROL						
Boys	16		6	9	1	0
Girls	35		11	15	7	2
TOTAL	51		17	24	8	2
PER CENT			33.3	47.1	15.7	3.9

TABLE XLVI

SELF-RATINGS OF ANXIETY OF ACCELERATED STUDENTS

TYPE OF STUDENT	N	Worry constantly	Worry quite often	Sometimes anxious	Rather easy-going	Extremely carefree
SUPERIOR ACCELERATED						
Boys	30	1	3	16	9	1
Girls	34	0	10	11	12	1
TOTAL	64	1	13	27	21	2
PER CENT		1.6	20.3	42.2	32.8	3.1
SUPERIOR CONTROL						
Boys	30	0	6	10	12	2
Girls	34	1	10	14	9	0
TOTAL	64	1	16	24	21	2
PER CENT		1.6	25	37.5	32.8	3.1
NORMAL ACCELERATED						
Boys	16	0	1	8	6	1
Girls	34	2	4	14	14	0
TOTAL	50	2	5	22	20	1
PER CENT		4	10	44	40	2
NORMAL CONTROL						
Boys	16	0	2	8	6	0
Girls	34	1	7	14	11	1
TOTAL	50	1	9	22	17	1
PER CENT		2	18	44	34	2

TABLE XLVII

SELF-RATINGS OF FRIENDLINESS BY ACCELERATED STUDENTS

TYPE OF STUDENT	N	Avoid meeting people	Indifferent about new friends	Friendly	Enjoy being with people	A very good mixer
SUPERIOR ACCELERATED						
Boys	30	2	2	8	18	0
Girls	34	2	0	11	20	1
TOTAL	64	4	2	19	38	1
PER CENT		6.2	3.1	29.7	59.4	1.6
SUPERIOR CONTROL						
Boys	30		2	10	16	2
Girls	34		1	14	17	2
TOTAL	64		3	24	33	4
PER CENT			4.7	37.5	51.6	6.2
NORMAL ACCELERATED						
Boys	16		0	6	10	0
Girls	33		1	7	23	2
TOTAL	49		1	13	33	2
PER CENT			2	26.5	67	4.1
NORMAL CONTROL						
Boys	16	0	1	5	9	1
Girls	33	2	2	5	23	3
TOTAL	49	2	3	10	32	4
PER CENT		4.1	6.1	20.4	62.7	8.2

SUMMARY OF FINDINGS

1. In general, the responses of accelerated and control students to the self-rating scale showed the same trends.
2. Accelerated students rated themselves with regard to talkativeness in much the same way as did the control students.
3. Superior accelerated students tended to rate themselves slightly higher in adaptability.
4. A greater degree of self-confidence was reported by accelerated students.
5. Accelerated students considered themselves slightly more emotional than did control students.
6. Approximately the same trends were noted in the ratings on anxiety for accelerated and control students.
7. About the same degree of sensitivity was reported by accelerated and control students.
8. Accelerated students rated themselves as high in friendliness as did the control students.
9. Acceleration of students having intelligence quotients below 120 seemed to result in a feeling of being easily discouraged. The data seemed to indicate that this was the most note-worthy trend in the results of the self-rating scale.

CHAPTER IX

TEACHERS' ESTIMATES OF THE SOCIAL AND PERSONAL DEVELOPMENT OF ACCELERATED PUPILS

Staff members at Western Canada High School in Calgary were asked to complete the Teachers' Questionnaire which was given in full in Chapter III,[43] for all accelerated and control students enrolled in their classes. No indication as to whether each student had been accelerated was given to the teachers. Although eighty-six questionnaires were filled out, a few of these had to be discarded because of the lack of corresponding controls. Of the twenty-four students rated, fifteen were rated by two teachers and nine were rated by one teacher. The total number of ratings considered was thirty-nine.

Table XLVIII summarizes the teachers' estimates of the talkativeness of the students. The superior accelerated students appeared slightly more talkative than the superior control students.

Accelerated students seem to be able to accept more criticism than do the control students. See Table XLIX.

Although superior accelerated students were given ratings which followed the same trends as those given to superior control students in adaptability, the normal accelerated students were rated a little higher in adaptability than the normal control students.

Teachers' ratings of the persistence of accelerated students were as high as their ratings of control students.

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[43] Cf. ante, pp. 27-28.

A few more superior accelerated students were rated as self-confident when compared with superior control students as shown in Table LII.

Excitability was noticed by teachers in several more instances in superior accelerated students than in superior control students.

The number of students rated as easy-going or extremely carefree was slightly greater for the superior accelerated students than for the superior control students. There were, however, fewer normal accelerated students than normal control students rated in this manner.

Accelerated students were rated by the teachers as being just as friendly as the control students. That no superior accelerated students were rated under the heading "Avoids meeting people", is, perhaps, noteworthy.

The number of teachers' estimates of the social and personal development of accelerated students was too small to be statistically significant. The data suggested that accelerated students were probably as highly rated as other students in personal and social characteristics.

TABLE XLVIII

TEACHERS' ESTIMATES OF THE TALKATIVENESS OF A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Talks very little	Rather quiet	A rather good conversationalist	A good conversationalist	Talks too much
SUPERIOR GROUP						
Accelerated Boys	9		2	0	5	2
Accelerated Girls	9		5	2	0	2
TOTAL	18		7	2	5	4
Control Boys	9	0	4	2	0	3
Control Girls	9	2	3	1	3	0
TOTAL	18	2	7	3	3	3
NORMAL GROUP						
Accelerated Boys	3	1	0	2	0	0
Accelerated Girls	18	0	9	2	5	2
TOTAL	21	1	9	4	5	2
Control Boys	3	0	0	0	0	3
Control Girls	18	2	7	3	3	3
TOTAL	21	2	7	3	3	6

TABLE XLIX

TEACHERS' ESTIMATES OF THE SENSITIVITY OF A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Very sensitive	Rather sensitive	Can accept mild criticism	Can accept considerable criticism
SUPERIOR GROUP					
Accelerated Boys	9	0	2	3	4
Accelerated Girls	9	2	0	3	4
TOTAL	18	2	2	6	8
Control Boys	9	0	2	3	4
Control Girls	9	2	3	2	2
TOTAL	18	2	5	5	6
NORMAL GROUP					
Accelerated Boys	3		1	2	0
Accelerated Girls	18		3	9	6
Total	21		4	11	6
Control Boys	3	0	0	1	2
Control Girls	18	1	7	6	4
TOTAL	21	1	7	7	6

TABLE L

TEACHERS' ESTIMATES OF THE ADAPTABILITY OF A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Too easily persuaded; unstable	Always ready to experiment	Moderately adaptable	Slow to adapt to changes	Stubborn; unwilling to experiment
SUPERIOR GROUP						
Accelerated Boys	9		3	3		3
Accelerated Girls	9	1	2	5		1
TOTAL	18	1	5	8		4
Control Boys	9		2	4	3	
Control Girls	9	1	4	2	2	
TOTAL	18	1	6	6	5	
NORMAL GROUP						
Accelerated Boys	3		1	1	1	
Accelerated Girls	18		5	11	2	
Total	21		6	12	3	
Control Boys	3		1	2		
Control Girls	18		5	8	5	
TOTAL	21		6	10	5	

TABLE LI

TEACHERS' ESTIMATES OF THE PERSISTENCE OF A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Discouraged at least obstacle	Gives up too easily	Average	Very persistent	Seldom gives up
SUPERIOR GROUP						
Accelerated Boys	8	1	1	2	1	3
Accelerated Girls	9	1	0	5	3	0
TOTAL	17	2	1	7	4	3
Control Boys	8	0	0	5	3	0
Control Girls	9	1	1	1	5	1
TOTAL	17	1	1	6	8	1
NORMAL GROUP						
Accelerated Boys	3		0	3	0	0
Accelerated Girls	18		4	11	2	1
TOTAL	21		4	14	2	1
Control Boys	3		0	3	0	
Control Girls	18		6	9	3	
TOTAL	21		6	12	3	

TABLE LII

TEACHERS' ESTIMATES OF THE SELF-CONFIDENCE OF A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Painfully self-conscious	Timid, often embarrassed	Sometimes self-conscious	Confident	Very confident
SUPERIOR GROUP						
Accelerated Boys	9			2	6	1
Accelerated Girls	9			4	4	1
TOTAL	18			6	10	2
Control Boys	9		0	5	3	1
Control Girls	9	1	1	3	4	0
TOTAL	18	1	1	8	7	1
NORMAL GROUP						
Accelerated Boys	3		1	2	0	
Accelerated Girls	18		1	8	9	
TOTAL	21		2	10	9	
Control Boys	3		0	0	3	
Control Girls	18		1	10	7	
TOTAL	21		1	10	10	

TABLE LIII

TEACHERS' ESTIMATES OF THE EMOTIONALITY OF A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Always very calm	Usually calm and objective	Neutral	Controlled largely by emotion	Very excitable, high strung
SUPERIOR GROUP						
Accelerated Boys	9	1	2	3	2	1
Accelerated Girls	9	1	4	2	1	1
TOTAL	18	2	6	5	3	2
Control Boys	9	1	2	6	0	
Control Girls	9	1	5	2	1	
TOTAL	18	2	7	8	1	
NORMAL GROUP						
Accelerated Boys	3	0	0	3	0	
Accelerated Girls	18	2	6	6	4	
TOTAL	21	2	6	9	4	
Control Boys	3		0	3	0	
Control Girls	18		10	6	2	
TOTAL	21		10	9	2	

TABLE LIV

TEACHERS' ESTIMATES OF THE ANXIETY
SHOWN BY A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Worries constantly	Quite often worries	Sometimes anxious	Rather easy-going	Extremely carefree
SUPERIOR GROUP						
Accelerated Boys	8		0	4	2	2
Accelerated Girls	9		1	4	3	1
TOTAL	17		1	8	5	3
Control Boys	8		1	5	2	
Control Girls	9		4	4	1	
TOTAL	17		5	9	3	
NORMAL GROUP						
Accelerated Boys	3		0	3	0	
Accelerated Girls	17		1	11	5	
TOTAL	20		1	14	5	
Control Boys	3		0	1	2	
Control Girls	17		3	8	6	
TOTAL	20		3	9	8	

TABLE LV

TEACHERS' ESTIMATES OF THE FRIENDLINESS SHOWN BY A GROUP OF GRADE X STUDENTS

TYPE OF STUDENT	N	Avoids meeting people	Indifferent about new friends	Friendly	Enjoys being with people	A very good mixer
SUPERIOR GROUP						
Accelerated Boys	9		2	3	3	1
Accelerated Girls	9		2	7	0	0
TOTAL	18		4	10	3	1
Control Boys	9	0	1	6	1	1
Control Girls	9	3	3	1	2	0
TOTAL	18	3	4	7	3	1
NORMAL GROUP						
Accelerated Boys	3		1	1	1	
Accelerated Girls	18		2	10	6	
TOTAL	21		3	11	7	
Control Boys	3	0	0	1	2	
Control Girls	18	1	3	11	3	
TOTAL	21	1	3	12	5	

CHAPTER X

STUDENTS' OPINIONS OF THE EFFECTS OF ACCELERATION

The opinion of students regarding the effects of acceleration were requested at the end of the student questionnaire.[44] The answers given by only the students whose intelligence quotients were above 120, were considered. The distribution of these superior accelerated pupils according to school attended in Grade X is given in Table LVI.

Unfortunately, the questionnaire was worded in such a way that students who had entered school at an early age were uncertain as to whether their opinions were required. Those who had skipped a grade or who had completed two grades in one year were mentioned specifically but the early entrants were not. Pertinent comments were no doubt lost by this omission.

Each accelerated student was asked in what ways being younger than his fellows had helped him in his school work. Fifteen students replied that being younger had not helped. Twenty students made no comment. Thirty-three pupils thought that acceleration had helped.

Many of the favorable comments regarding the effect of acceleration on school work were definitive. Five agreed with the girl who stated, "I will be finished school sooner and can get started in training for my profession sooner". That being younger was helpful, "because it doesn't

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[44] The latter part of the student questionnaire was adapted from a questionnaire used in Crescent Heights High School in Calgary.

TABLE LVI

DISTRIBUTION OF SUPERIOR ACCELERATED STUDENTS
ACCORDING TO SCHOOLS ATTENDED

HIGH SCHOOL	BOYS	GIRLS	TOTAL
EASTGLEN	3	1	4
STRATHCONA COMPOSITE	3	4	7
STRATHCONA	4	1	5
VICTORIA COMPOSITE	4	7	11
WESTGLEN	6	5	11
CENTRAL	3	3	6
CRESCENT	5	8	13
WESTERN	5	6	11
	33	35	68

matter if I fail once", was the feeling expressed by three others. Two other comments were, "The other students look up to you if you get high marks", and, "They rate you high and smart". "If you are younger than your other school mates," said one student, "I think it gives you confidence". Acceleration had placed one person "about average or a little ahead of his colleagues because of their lower ability". Two students who declared that they had fewer friends and fewer extracurricular

activities because of being younger, assumed the attitude that this allowed for "more time for study," and was, therefore, advantageous.

Older students in one's class could "help explain things to me," said one student, a statement which was corroborated by three others. Several students who classified acceleration as beneficial gave no reasons for their answers. The comment made by nine persons in a variety of ways was made by one girl as follows, "You have to study harder to keep up with the class."

In answer to the question, "In what ways has being younger than your fellows hindered you in your school work?" twenty-one replied in the negative. Twenty-three students did not answer. Being younger had been a disadvantage, according to the statements made by twenty-four others. The reason given by three students was, in the words of one of them, "I have to work harder for the marks I do get." The opposite reason, "I did not work as hard," mentioned by a student, was similar to that given by two others.

"It has made me discouraged at times," said a boy who skipped Grade VII and who later had honor standing in the Grade IX examinations. Another felt discouraged when he was behind in his work. One student said, "The older students get impatient with me for not being able to keep up with them (this happened during the first and second years after I took two grades in one year)." While one person who had an intelligence quotient of 128 and whose Grade IX marks in Social Studies and

Mathematics were "D" and "C", respectively, had the impression that "More is expected of me because of the fact I skipped," another student thought, "They don't expect you to be so smart." The statement made by one student, "Marks are not as high as they might be if I was older," was echoed by two others. "I cannot reason as well as more mature students," reported one boy whose intelligence quotient was 136. Six students inferred that valuable school work had been missed because of acceleration. Such remarks as the following illustrate this viewpoint: "It put me behind in my math.," or "not the same background as other pupils."

However, a greater number of favorable comments than adverse criticisms were made by the students regarding the effects of acceleration on school work.

That acceleration is helpful in the development of one's personality was the conclusion reached by thirty-four students. Eight thought that there was a definite advantage in being with older students. "It enabled me to mix with people of a . . . . . variety of ages," was one comment. "I like older kids better than younger," said another. Twenty-two gave the judgment that acceleration had helped to develop a more mature personality. "I was forced to grow up faster," was a typical response.

Thirty students reported that being younger had been a hindrance in their personal development. The tendency towards growing up quickly,

mentioned above as beneficial, appeared to three students as harmful. "You miss some of your childhood," commented one of these. "A person's personality has to grow to suit his grades in school, not his age, and it has to develop too fast and sometimes over their emotions," explained another. Self-consciousness was in the opinion of nine individuals, the result of acceleration. "In mixed gatherings with older students," stated one student, "I am sometimes rather self-conscious." Making friends seemed to be more difficult for eight students because they were younger than their school mates. Said one boy, "You are younger than the rest and do not mix well with them." "Not enough friends or activities," was another complaint.

Although twenty-seven students made no comment regarding the ways in which acceleration had helped in their social life and twelve more gave negative responses, there were twenty-nine who replied favorably. "I have met many people older than myself I would not otherwise have known," remarked one girl, "and have many more friends, as I do not enjoy being with kids the same age as I am, anyhow." Nine others were unanimous in their agreement that being with older students was profitable socially. More similarity was found in the responses regarding the effects of acceleration on one's social life than in the replies to other questions. Thirteen mentioned the greater number of social events in which they could or did participate, because of their grade status. "You go to parties through friends," "I am able to join some clubs due to

my grade and am able to meet more people," "I go to more school activities and get to know more older people," "I have been able to go more places," and "My social life has broadened faster than others of my same age," were the comments made by a few of these. The two advantages most commonly reported were the privilege of having older friends and the increase in social opportunities.

The question, "In what ways has being younger than your fellows hindered you in your social life," brought thirty-eight varied criticisms of acceleration. Two felt that the disadvantages were temporary. "When I started Grade X," wrote one boy, "I found that I was excluded from a lot of social events due to my age. Now, however, I am beginning to be invited to more and more social events." Being left out was an experience shared by five others. One of them reports, "You are not invited to as many parties because you are younger." Some clubs exclude the younger applicants, according to four responses. "Some difficulty in groups or organizations with specified age groups," was the answer of one girl who had participated in twenty-two social activities in the previous month. "Most of the boys are old enough to drive cars and have more fun and meet more people," said a fourteen-year old boy. One who found it hard to make friends explained,"Don't seem to mix with others." "Older students don't seem as interested in younger students," remarked a lad whose three friends were older than himself. The difference in age was responsible, according to eight replies, for interfering with social success. A few

comments which expressed this feeling were: "They consider you too young to go out," and "Others haven't accepted me as easily as if I were older." "It has stopped me from making too much social contact with older people," said a boy who had been to only one social gathering, apart from movies, during the previous month. Being younger was a source of embarrassment to a few. As one of these concluded, "It set me apart." Almost 60 per cent of the accelerated students felt that younger students were at a disadvantage socially.

SUMMARY OF FINDINGS

1. Half of the sixty-eight superior accelerated students reported that being younger had helped in their school work. Only twenty-four said that acceleration had hindered their education.
2. Thirty-four students stated that being with older pupils had helped to develop their personalities.
3. While twenty-nine persons commended acceleration as helpful in one's social life, a large group of thirty-eight students felt that a difference in age was a hindrance.

CHAPTER XI

GENERAL SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

GENERAL SUMMARY OF FINDINGS

1. Of the 2618 students who completed the survey, 171 had been accelerated. The final accelerated group numbered 119.
2. The superior accelerated group included the sixty-eight accelerated students who had Terman-McNemar intelligence quotients of 120 or over. The mean intelligence quotient for the superior accelerated group was 129.8. The corresponding control group had the same mean intelligence quotient of 129.8. The mean intelligence score for the remaining fifty-one accelerated students, designated as the normal accelerated students, was 111.8 but the mean intelligence score for the corresponding control group was 114.2.

   The difference in intelligence quotient between the accelerated student was six points or less for sixty-two of the sixty-eight pairs of superior students. For six pairs, the differences in intelligence quotients ranged from seven points to eleven points. For forty-seven of the fifty-one pairs of normal pupils, the difference in intelligence quotient between the accelerated pupil and non-accelerated pupil was six points or less. In four instances, the differences were eight or ten points.
3. There was, of necessity, a difference in age between the accelerated students and the control students. The mean ages in years and months

were as follows: superior accelerated group, fourteen years and eight months; superior control group, fifteen years and five months; the normal accelerated group, fourteen years and eleven months; the normal control group, fifteen years and five months. For sixty-six of the sixty-eight pairs of superior students, the age difference between the accelerated student and the control student was eighteen months or less. In two instances, the difference was twenty-one months. For fifty of the fifty-one pairs of normal students, the age difference was eighteen months or less. In one case, the difference was twenty-one months.

4. Significantly lower marks were made by the superior accelerated students, as compared with the superior control students, in the Grade IX final examinations in Reading and Language. The critical ratios of the differences were 1.96 for Reading and 2.56 for Language. Generally, however, the differences in academic achievement were not statistically significant.
5. Forty-eight per cent of the final accelerated group had completed two grades in one year. Twenty-two per cent had skipped a grade. Four per cent had had two double promotions. Twenty-six per cent had entered school before the age of five and one-half years. Higher marks in the Grade IX final examinations were made by the superior students who completed two grades in one year than by those who entered school early.
6. The superior accelerated students, compared with the superior control

students, held fewer official positions, were members of fewer athletic teams, and participated in fewer social activities. Older companions were preferred by accelerated students.

7. On a scale of personal and social traits,[45] the self-ratings of accelerated students showed, in general, the same trends as the self-ratings of control students. However, accelerated students rated themselves slightly higher than the control students did in emotionality, adaptability, and self-confidence. The data also suggested that normal accelerated students feel that they give up too easily.
8. Nine teachers who rated twenty-four accelerated students on a scale of personal and social traits[46] gave them as favorable ratings as those which they gave to the corresponding control students.
9. That acceleration was advantageous in one's school work was the opinion of forty-eight per cent of the superior accelerated students. That being younger was a hindrance, academically, was stated by thirty-five per cent.

   In the development of one's personality, acceleration was considered by fifty per cent as helpful and by forty-four per cent as harmful. Forty-three per cent of the accelerated students thought that being with older students had helped them socially, but sixty per cent declared that being younger than their fellows had hindered them in

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[45] Cf. ante p. 23.

[46] Cf. ante p. 27.

their social life.

CONCLUSIONS

1. The self-ratings on a scale of personal and social traits by accelerated students showed the same trends as the ratings of control students. Therefore, accelerated students considered themselves reasonably well-adjusted. To teachers, accelerated students appeared to be just as well-developed as non-accelerated students both socially and personally. The preference of accelerated students for older companions seemed to indicate harmony with their classmates.

   However, accelerated students were not as active socially as others. They were not chosen as often to play on athletic teams or to be leaders.

   Many of the Grade X accelerated students were at a disadvantage as athletes and as leaders because of their size. Furthermore, the difference in age between the accelerated and non-accelerated students might account for the social differences.

   Probably accelerated students were just as well-developed socially and personally as other students of the same age.

2. That acceleration is an advantage in one's school work and in one's personality, but a hindrance in one's social life seemed to be the

opinion of many accelerated students. There seems to be some evidence in the data of the study to corroborate these statements.

3. Generally, the differences in academic achievement between accelerated and non-accelerated students were not statistically significant. In the Grade IX Reading Test, the difference in the marks obtained by the superior accelerated students and by the superior control students was significant at the 5 per cent level. In the Grade IX Language Test, the difference in the marks obtained by the superior accelerated students and by the superior control students was significant at the 1.24 per cent level. It must be remembered that the accelerated students were younger than the control students.

RECOMMENDATIONS FOR FURTHER STUDY

1. A study of the effects of acceleration on the academic progress and on the personal and social development of Grade XII students could be made. The results of the Grade XII final examinations would be a fairly accurate measure of scholastic achievement. The use of percentile rankings would be preferable to letter gradings.
2. In order to allow the age factor to remain constant, a group of accelerated Grade XI students could be compared with non-accelerated Grade X students. Standardized achievement tests could be used to measure academic progress. Although the school environment for the two groups would be different, such a study could indicate to a degree how accelerated students compare socially and personally with non-

accelerated students of the same age.

3. The number of accelerated students who withdraw from high school before graduation could be investigated.
4. Accelerated students could be studied at the university level.
5. Academic progress could be determined by a comparison of the marks obtained at the end of the freshman year by accelerated and non-accelerated students. A follow-up study could be made at the end of the year of graduation. The social and personal development of accelerated students could be compared with that of non-accelerated students. A scale of personal and social traits which is more accurate than the one used in the present study would be advisable.
6. Parents of accelerated students could be asked for their opinions regarding the advantages and disadvantages of rapid promotion in school. This could be done at the high school level and again at the university level.

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